APPAREL RESEARCH NETWORK (ARN) PROGRAM

Final Technical Report

(Contract Number SPO103-02-D-0018/ Delivery Order 0006)

IMPLEMENTATION OF INTEGRATED RETAIL MODULE (IRM)

Installation At
Lackland Air Force Clothing Initial Issue Flight (AFCIIF)

Prepared for:

Apparel Research Network (ARN) Program
Defense Logistics Agency
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14. ABSTRACT

This paper presents a summary of the results of the Apparel Research Network's (ARN) installation providing for the development and implementation of the Integrated Retail Module (IRM) at Lackland Air Force Base, San Antonio, Texas, to support the Lackland Air Force Clothing Initial Issue Flight (LAFB AFCIIF). Implementation of ARN IRM at Lackland AFCIIF was completed as part of the research into methods to enhance the ARN Supply Chain Management (SCM) systems for achieving reduced military clothing inventories through automated systems providing asset visibility at the wholesale, retail and manufacturing levels and balanced flow replenishment. The IRM solution ties together: (1) the Virtual Item Manager-Wholesale Local (VIM-WL) web based inventory management application; (2) both a wired and wireless network outside the Ft. Jackson Army firewall; (3) electronic forms filing and management with CabinetNG; (4) RF applications with handheld terminals for warehousing data capture; and ultimately, (5) optical character recognition automated issue capture system known as the IRM Control Panel. IRM is part of the ARN solution to reduce

15. SUBJECT TERMS

Apparel Research Network (ARN); Integrated Retail Module (IRM), Air Force Initial Issue Flight, Recruit Clothing; Supply Chain Management; Virtual Item Manager/Wholesale Local; Quality Logistics Management System (QLM); Recruit Training Center; Inventory Management, and electronic forms management and filing systems (CabinetNG).

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PREFACE

This Final Technical Report covers work accomplished for the Apparel Research Network (ARN) of the Defense Logistics Agency (DLA) in conformance with Delivery Order 0006 during the period 20 March 2003 to 28 February 2005. It specifically covers the analysis, design, development, rollout, and ongoing support of the ARN Integrated Retail Module (ARN IRM) at the Lackland Air Force Clothing Initial Issue Flight (LAFB AFCIIF). Implementation of ARN IRM is part of the enhancement of the ARN Supply Chain Management (SCM) systems for achieving reduced military clothing inventories through automated systems providing asset visibility at the wholesale, retail and manufacturing levels and balanced flow replenishment.

Prior to this implementation, the ARN Partners had developed the centralized ARN Asset Visibility System DataMart (AAVS DataMart) and the Quality Logistics Management (QLM) Central system to form the Virtual Item Manager – Integrated Retail Module (VIM-IRM) in support of the Item Managers in the Clothing & Textiles Directorate (C&T) of the Defense Supply Center Philadelphia (DSCP). Concurrently ARN implemented a retail inventory management system (QLM/Retail) at the Marine Corps Recruit Depot in San Diego (MCRD-SD). This was followed by implementation of ARN IRM (previously QLM/Wholesale-Local) at five U. S. Army Clothing Initial Issue Points (CIIPs) and at the MCRD–Parris Island (PI). The ARN IRM also feeds data to the Virtual Item Manager system for wholesale local information and may be referred to as the ARN VIM IRM. These developments are documented in ARN Final Technical Reports. The final technical reports may be reviewed on the ARN web site: http://arn2.com/

Other ARN Supply Chain Management (SCM) System projects include:

- Development and implementation of VIM-ASAP (ARN Supply-chain Automated Processing) for tracking manufacturing assets and electronic invoicing.

- Development and implementation of ASTRA (ARN Supply-chain Transaction Repository Audit) for validation of MILSTRAP and other transactions before transferred to SAMMS and the AAVS DataMart.

- Creation of a link between the 3D Whole Body Scanner (WBX) scan data and the clothing form scan data at the MCRD-SD and the MCRD-PI to obtain critical issue data for replenishment of stocks.

- Enhancement of functions and communications in the retail and wholesale-local systems to create the ARM-IRM supply chain management (SCM) system at Ft. Jackson, and roll out of ARN VIM IRM to LAFB AFCIIF. The latter is covered by this report.

1.0 EXECUTIVE SUMMARY

1.1 Overview

In the original Short Term Project (STP) proposal for Great Lakes Naval Training Center (GLNTC), AdvanTech included installation and support activities for the ARN VIM IRM and wholesale local inventory management system. This effort was detailed as Work Packages (WP) Number 1, 2, and 6 in Delivery Order Number 0006, Contract Number SPO103-02-D-0018. As a result of decisions by ARN II Program Management, AdvanTech was instructed to redirect those Work Package efforts from GLNTC to the Lackland Air Force Central Initial Issue Flight (LAFB AFCIIF).

This paper presents a summary of the results of the installation and support of the ARN VIM IRM at the LAFB AFCIIF. The sections of this document describe the entire implementation process from the initial survey and recommendations to this final technical report.

The success of the implementation is evident throughout the report. The system recommendations were developed based on the guidance from the Department of Defense, Defense Logistics Agency that the efforts and system should focus on assisting the LAFB AFCIIF to reduce inventory investment by implementing technologies and practices developed by the ARN. ARN Program Management provided detailed guidance throughout the project.

The success of the project is further evidenced by the testimony in a memo from AFCIIF Supervisor, Ron Barney to Sally DiDonato, Clothing & Textiles Branch Manager at DSCP:

> *From: Barney Ronnie D GS-09*
> *37 LRS/LGRC[mailto:RONNIE.BARNEY@LACKLAND.AF.MIL]*
> *Sent: Friday, October 01, 2004 9:32 AM*
> *To: DiDonato, Sally (DSCP)*
> *Subject: Update*
>
> *Sally,*
>
> *Just wanted to let you know how things are going with VIM – IRM. First of all, I am extremely pleased with the system, the support and service that I'm getting is outstanding. My issue and stockage rates have never been better.*
>
> *My management is constantly commenting on the improvements since VIM – IRM implementation. The folks over at AdvanTech are really great and responsive to my needs and questions. They are just awesome; DSCP really put a good team together with this project. You and your folks are really a pleasure to work with, from Harry, Gerald, Steven, and on down the line, my problems are handled in a*

very timely manner and I really appreciate this. I'm not sure if you guys get any kudos from the other recruit centers, but I can tell you that Lackland has no complaints. Again, thanks for the wonderful support from you, your staff, and AdvanTech.

v/r
Ronnie

The Apparel Research Network has developed innovative technology solutions that following implementation have subsequently improved recruit clothing supply chain management processes within DLA. ARN Systems have been developed as enablers to provide support for customer driven uniform management and replenishment needs. Within the ARN umbrella of systems, ARN VIM IRM has been developed as an independent network server linking DSCP's Clothing &Textiles Division SAMMS, AAVS DataMart and the local activities supported by ARN IRM (previously QLM/Locals).

The result has been the creation of a single unit/integrated systems approach for recommending relocation of uniform items from "depots" to LAFB and other RTCs. To accomplish this, the base QLM-Client/Server was modified to use data from the AAVS DataMart for decision support and management of inventory in the supply chain, and a web-based interface with the Virtual Item Manager (VIM) was incorporated in VIM - IRM.

The goal of this short-term project was the conversion of the recruit-clothing inventory at LAFB AFCIIF to DSCP-ownership. This involved the use of scan forms to improve the accuracy of issue data collected and to increase processing speed; enhancing the audit capability by incorporating bar-code technologies; automating the receiving, stock movement and physical inventory functions using radio frequency handheld data collection devices and bar code technology; and, converting the legacy stock fund materials management system to a fully functional, online real-time Internet Application

The expected benefits were: (1) more accurate inventory balances; (2) easier and faster issue data capture; (3) achieve more accurate recruit identification data through the issue process; (4) faster, more efficient form scanning process; and, (5) reduction in errors and edit checks during the scanning and data gathering process.

These system capabilities are thus enablers that ensure that recruit issues are accurately recorded without adversely affecting Lackland AFCIIF performance standards during the recruit issue process. DSCP Item Managers have better production requirement data, and wholesale-local inventory requirement predictions are more accurate and support just-in-time inventory methodologies.

1.2 Summary Of Benefits Achieved

This project provided several benefits and a substantial return-on-investment for DLA and DSCP. It continues to enhance management of the AFCIIF wholesale local ("retail local") inventory. The following management metrics reported by AFCIIF management are indicative of the system's impact on the abilities of the AFCIIF to maximize use of supply chain management tools available to them in ARN VIM and ARN IRM. (See Sectrion 6 of this report for additional detail on systems benefits achieved at the AFCIIF.)

- The AFCIIF now uses the system to obtain complete asset visibility, and to concurrently initiate timely replenishment actions.

- Timely replenishments resulted in better fill rates, reducing the number of recruits that did not receive a full clothing authorization from a high of 600 per month before ARN IRM, to less than 10 per month with ARN IRM.

- Timely replenishments and better fill rate also resulted in the correct sizes being in stock, which reduced the number of uniform alterations by 75 percent.

- Timely replenishments, resulting from daily-suggested order lists, reduced emergency orders by 95 percent.

- The automated physical inventory features greatly improved accountability, and the inventory accuracy rate improved from 95 percent before ARN IRM, to 99 percent with ARN IRM.

There were several objectives defined at the start of the project. The initial project objectives and results achieved from implementation of ARN VIM and ARN IRM include the following:

- **Asset Visibility –**

  The ability for DSCP to efficiently see all data is required to meet ARN's objective to "see" on-hand inventory data regardless of the location at the RTC. This is the core functionality required as an essential aid to decision-making and has been successfully accomplished.

- **Current Information and Operational Efficiency –**

- The ARN VIM and IRM solutions provide access to current information on an as needed (i.e., timely) basis and enhances the efficiency of the LAFB operations. This includes impacts on personnel support requirements for data collection, processing and materials handling activities.

- **Improve Effectiveness –**

  The ARN VIM and IRM systems solutions implemented have had a favorable impact by supporting the management decision-making process both at LAFB and DSCP. The systems that are now in place enable minimum total inventory with lowest stock outs.

In summary, this project provided several benefits and a substantial return-on-investment for DLA and DSCP. It enhanced management of the "wholesale-local" inventory. Benefits are being provided on an ongoing basis through the use of comprehensive decision support tools now available in VIM-IRM. By using this technology, DSCP now receives timely, accurate recruit specific issue data necessary to accurately plan production requirements with manufacturers. The systems also provide data necessary to allow ARN VIM and ARN IRM to accurately predict future wholesale-local inventory requirements to ensure the proper amount of inventory is located at LAFB when it is needed, and to better predict the future requirements.

ARN VIM and ARN IRM provide decision support capabilities to evaluate stock levels and replenishment requirements at all related wholesale-local asset inventory locations, as desired and directed. These capabilities, in turn, provide DSCP IMs with the ability to manage the redistribution of assets from DSCP Depots and "Bill & Hold" locations to the appropriate location to support LAFB. By using capabilities provided by VIM-IRM, DSCP has been able to effect significant reductions of both wholesale-local (LAFB) and wholesale inventories.

Ultimately, the results achieved proved the concepts for centralizing the ownership of the inventories at the RTC locations with replenishment handled as part of an integrated management of wholesale inventories. Thus, this project provided a sound framework for the future expansion of these concepts for future enhanced support of the Recruit Training Centers by the Defense Supply Center Philadelphia.

2.0 INTRODUCTION

ARN VIM IRM systems have been fully installed and are operational at the LAFB AFCIIF. The system supports the functional requirements of the local wholesale supply chain management for recruit clothing. The system provides information on issues to the ARN VIM system and is linked for inventory requisitioning purposes to the Defense Supply Center Philadelphia's (DSCP) VIM–ASTRA, for transaction validation, and the Standard Automated Material Management System (SAMMS) through an ISDN and Internet link.

2.1 ARN System Overview

The ARN Asset Visibility System (AAVS) and AAVS DataMart were created to collect data into a single source to provide Item Managers at the retail (Recruit Training Centers (RTCs)) and wholesale (DSCP) level with clear visibility of all recruit clothing assets (National Stock Numbers [NSNs] within Product Grouping Codes [PGCs]) in all segments of the supply chain. Operational data is extracted from the SAMMS Clothing & Textile (C&T) server and used as the basis for the operational and decision support capabilities in the Virtual Item Manager (VIM) system incorporating VIM - QLM/Central for wholesale inventory management capabilities.

ARN IRM was developed as an independent network server linking C&T SAMMS, AAVS DataMart and ARN VIM into a single unit/integrated systems approach for recommending relocation of uniform items from "depots" to RTCs. To accomplish this, the base VIM Client/Server was modified to use data from the AAVS DataMart for decision support and management of inventory in the supply chain. A web-based interface with the Virtual Item Manager (VIM) was incorporated in ARN IRM.

VIM was developed to provide a common user interface for Item Managers to use to manage the supply chain using inventory data flowing from the retail and wholesale levels to the AAVS DataMart and VIM-IRM. The Virtual Item Manager (VIM), as developed, uses a combination of computer and web-based software that provides Item Managers with the supply chain and inventory information necessary to expedite distribution of assets. The relationships of the systems comprising the supporting information systems architecture are shown in Figure 1 – Systems Architecture.

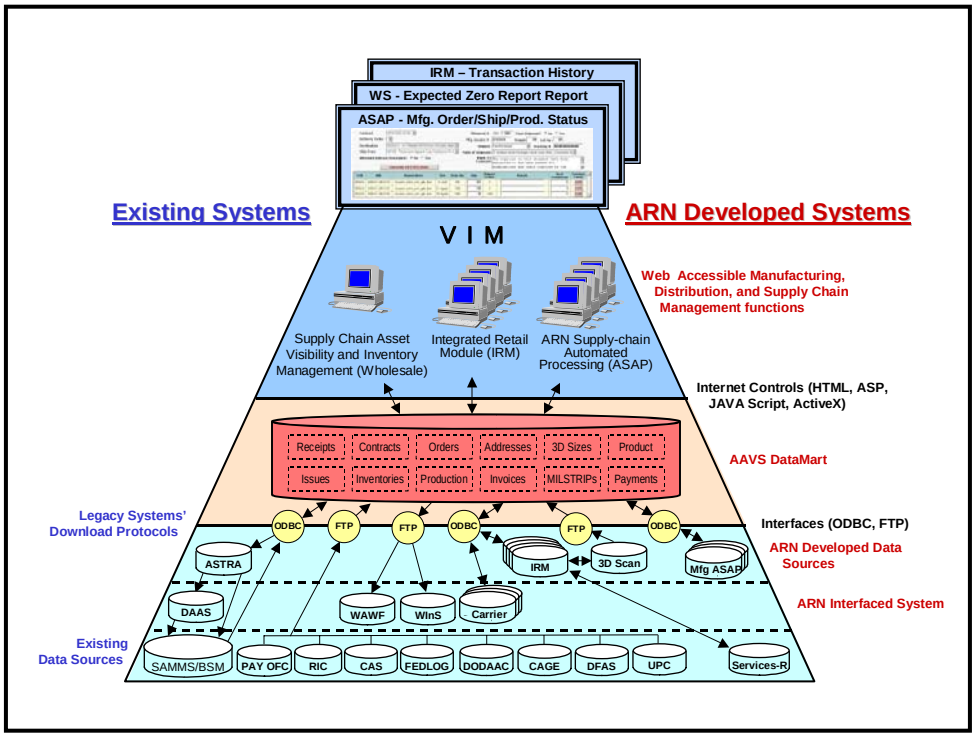


Figure 1 - Systems Architecture.

The implementation of ARN VIM and ARN IRM, as implemented at LAFB AFCIIF, involved processing the transactions from LAFB ARN IRM through ARN VIM. After processing, the issue information in MILSTRIP format is transferred to VIM–ASTRA, for validation, and then processed through SAMMS.

This process results in the replenishment, receipt, and issue of recruit clothing, creation of financial transactions that are processed from SAMMS to DFAS for payment by LAFB AFCIIF U.S. Air Force legacy systems.

2.2 Scope of the Project

The scope of this project required Project Team members to coordinate tasks and activities necessary to take the ARN IRM system, as created for Ft. Jackson, and to tailor and roll it out to the LAFB AFCIIF. Tailoring of ARN IRM system software, testing, and implementation was accomplished to mirror LAFB AFCIIF's legacy system transactions.

The ARN VIM and ARN IRM Server hardware, systems software, and communications were hot-staged at AdvanTech and shipped to LAFB AFCIIF. The contracts to establish communication linkages for ARN VIM and ARN IRM were handled by AdvanTech, and the

Project Team subsequently oversaw the installation and training in the use of the ISDN link and the Internet Service Provider (ISP) software and communication capabilities to transfer information to VIM-QLM/Central via the Internet

The Project Team followed preparation and installation with implementation and "go-live" support. This activity provided essential support for the construction of all data tables and data conversion necessary to obtain issue information from the LAFB legacy system.

Subsequent to implementation and go-live, the Project Team provided support for system operation and management support. AdvanTech provided system operational and management support to the DSCP and Wholesale Local Item Managers, providing recommendations for ARN VIM and ARN IRM operations and routine inventory support. These activities required close collaboration with personnel at DSCP as well as on-going and frequent communication with personnel at LAFB AFCIIF.

Throughout the project, AdvanTech provided routine reports and project status updates. Status reports were routinely provided on a monthly basis by email and hard copy. Monthly Interim Progress Reports (IPRs) were prepared and provided. This document is the Final Technical Report.

2.3 Short Term Project Objectives

The objectives of the Short Term Project (STP) and project proposal leading to this FTR included:

- Implement ARN IRM to mirror LAFB AFCIIF transactions. Upon implementation of ARN IRM, the system was to be used immediately to start making decision support recommendations based on AFCIIF issue input.

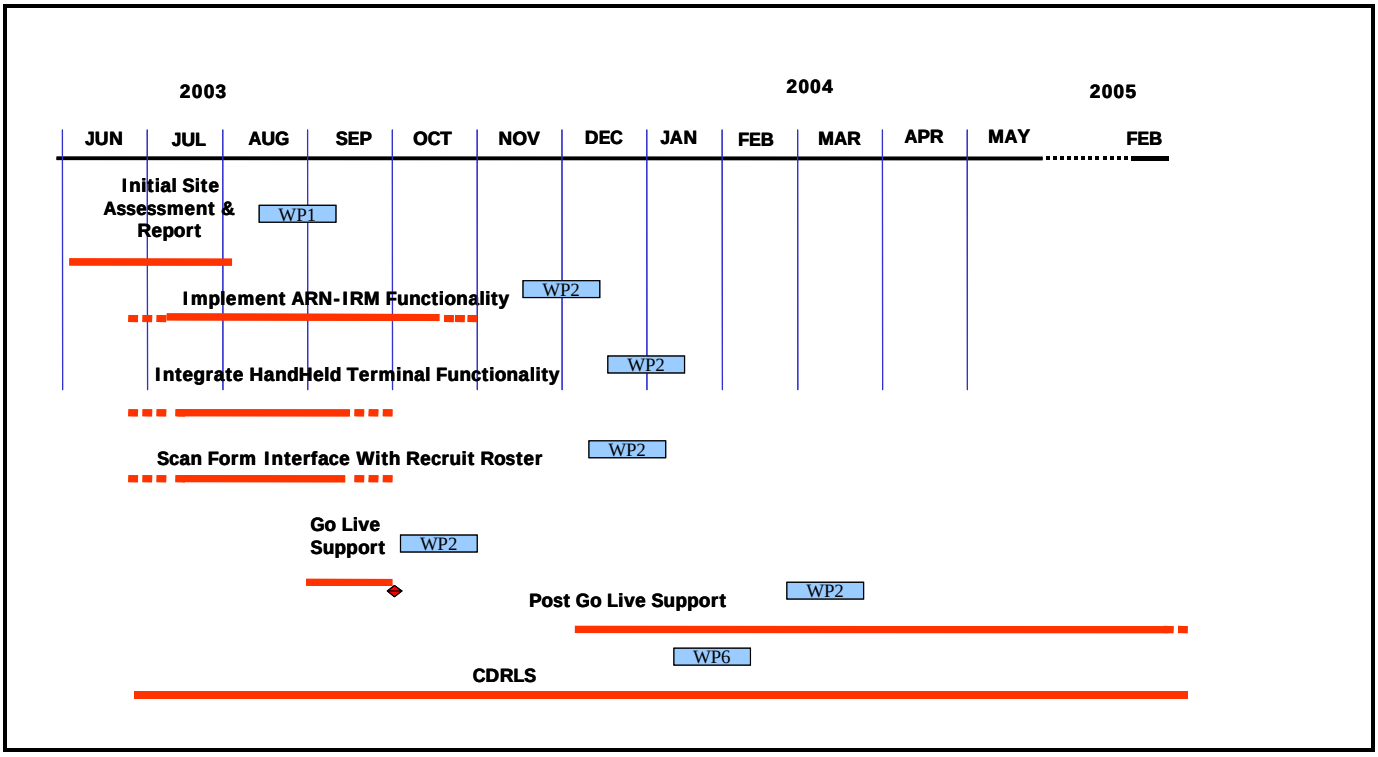
    - Essential order and inventory management information was to be transmitted from AFCIIF and ARN IRM to ARN VIM via ASTRA, SAMMS and the AAVS DataMart, with VIM providing the common data and user interface.

    - The overall objective was to provide the DSCP Item Managers, through the ARN VIM and ARN IRM system functions, the information they needed to manage and control DSCP-owned inventory at the AFCIIF.

2.4 Timeline

The following Gantt chart, with Work Packages (WP) identified) provides an overview of the time-line that guided the implementation activities at LAFB AFCIIF.

Figure 2: Implementation Timeline



2.5 Key Steps and Responsibilities

The chart below contains key steps and dates in 2003 that were associated with the ARN VIM and ARN IRM implementation at LAFB AFCIIF.

IMPLEMENTATION TASKS/STEPS	TIMEFRAME	ACTION
Pre-Site Visit Data Collection.	5/1 - 6/10	DSCP; ATI
Site Visit Data Collection: Scan Form Assessment, Assess Warehouse Locator System/Prepare “plan-o-graph” of Warehouse	6/10 - 6/13	ATI
RF LAN Requirements Analysis and Report	6/16 – 7/30	Computer Pro (Symbol); ATI
Share Administrative Procedure and Timeframe to Acquire ISDN, ISP, and Wiring Contractor. Submit AF 3215 and obtain approval of RF System.	6/10 – 7/30	LAFB
Provide file layout(s) (Standard MILSTRIP) Required by	6/10 – 7/30	LAFB

IMPLEMENTATION TASKS/STEPS	TIMEFRAME	ACTION
Legacy System(s).		
Specify ARN Standard MILSTRIP File Layouts for Data Transfer to AFCIIF Legacy System(s).	6/13 – 7/30	ATI
Requirements Analysis; Pilot Installation Report; Implementation Report with Recommendations for Process Redesign.	6/16 – 7/30	ATI
Specify technical requirements for ISDN and ISP.	7/1	ATI
Purchase PCs, HHTs, RF equipment, Other Components.	8/11	ATI
Order ISDN and ISP (In Accordance With Lackland procedures).	8/11	ATI
Hot-stage ARN Hardware & Software at AdvanTech; Ship to LAFB	8/19	ATI
ARN VIM/Wholesale System Implementation; Prepare Standard MILSTRIP File Layouts to AFCIIF Legacy Systems; Prepare Issue Scan Forms; Bar Code/Modify Warehouse Locator System If Necessary; User Training.	7/15 - 9/30	ATI; LAFB
RF LAN Implementation & Wiring Contractor String Wire.	9/8 – 9/12	ATI
Install ARN System at LAFB.	9/8 – 9/12	
System Testing-Test All Components with Wiring Contractor Present.	9/8 – 9/12	ATI
Physical Inventory.	9/26 – 9/28	DSCP; LAFB
Inventory Management & ESOC Processing; Implement Recommended Stock Movement Report & Detailed Audit Reports.	9/30	ATI
GO-LIVE	10/1	DSCP; LAFB
Ongoing Support & Program Revisions / SCRs.		ATI

Table 1: Key Steps and Responsibilities

3.0 SYSTEM ARCHITECTURE & OPERATIONS

3.1 Overview of System Architecture

The overall focus of the ARN Asset Visibility System (AAVS) and AAVS DataMart is on the collection of data in a shared repository for use by the Item Managers at the retail (RTCs) and wholesale (DSCP) levels. The systems incorporated in this integrated approach are designed to provide all users with clear visibility of all recruit-clothing assets throughout all segments of the supply chain. Further, the systems extract operational data from the Clothing & Textile (C&T) server and use this information as the basis for supporting decisions by the Item Managers for supporting operational needs. Thus, the Virtual Item Manager (VIM) system incorporates the decision support capabilities of QLM/Central for wholesale inventory management requirements.

In the efforts that have been accomplished to-date, ARN VIM and ARN IRM provide an independent network of servers linking C&T SAMMS, AAVS DataMart, and ARN IRM Sites (formerly QLM/Locals) and ARN VIM into an integrated system for recommending relocation of uniform items from “depots” to the supported RTCs. To create this integrated systems approach, the base QLM-Client/Server was modified to use data from the AAVS DataMart for decision support and management of inventory in the supply chain.

A web-based interface with the Virtual Item Manager was incorporated in ARN IRM and was developed to provide a common user interface for Item Managers to use to manage the supply chain using inventory data flowing from the retail and wholesale levels to the AAVS DataMart and ARN VIM. The Virtual Item Manager (VIM) as developed uses a combination of computer and web-based software that provides Item Managers with the supply chain and inventory information necessary to expedite distribution of assets.

The implementation of ARN VIM and ARN IRM, as it was implemented at Ft. Jackson and LAFB AFCIIF, involves processing the MILSTRIP transactions through ARN VIM. After processing, the issue information in MILSTRIP format is transferred to ASTRA and then processed through SAMMS.

3.2 General Concept of Operations

In preparation for transfer of ownership of recruit clothing assets at LAFB AFCIIF to DSCP, AdvanTech implemented the ARN VIM and ARN IRM. The purpose of the system is to provide restock recommendations based on LAFB AFCIIF projections of the numbers of recruits to be trained/processed, and the actual clothing issues information transmitted to the AAVS Data Mart. System relationships and data flows are illustrated in Figure 3.

Concurrent with the transfer of inventory assets to DSCP ownership, the LAFB AFCIIF stock location was designated as a new DSCP RIC (Routing Identifier Code) or Depot. The AFCIIF's transactions are sent via ISDN to VIM. VIM then processes the AFCIIF issue information, adjusting the quantities of individual NSNs available for issue, generating replenishment requirements, and manages the local inventory. Issues, Receipts, Adjustments, and Redistribution Requests are transmitted into SAMMS via the Clothing & Textiles (C&T) VIM - ASTRA daily from VIM.

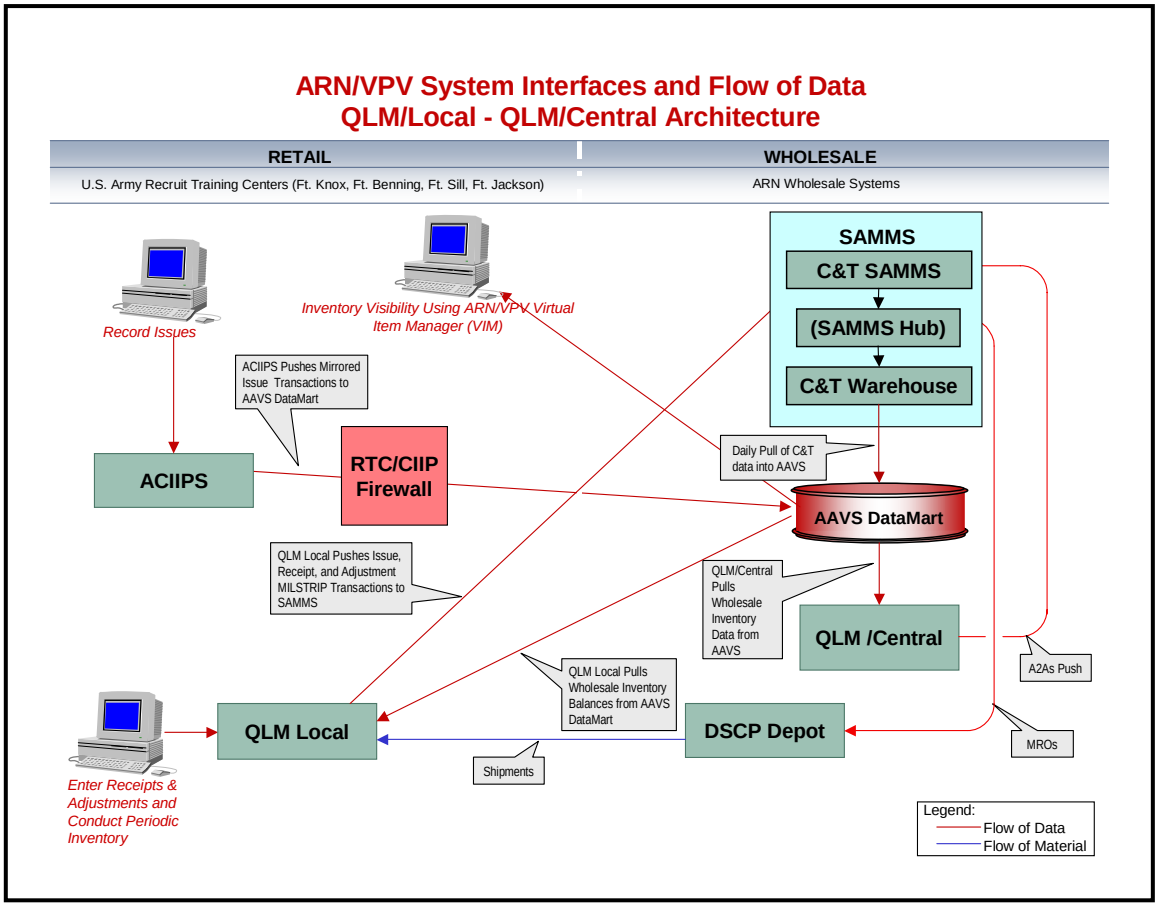


Figure 3 ARN/VPV System Interfaces & Data Flows

This approach, as illustrated above in Figure 3, shows that there is no interference with the AFCIIF operation, and minimal impact on current system operation and resources. The objective was to make the transfer of asset ownership with inventory replenishment responsibilities to DSCP and implementation of ARN VIM and ARN IRM as transparent as possible to the AFCIIF. As designed, VIM-QLM/Central (subsequently upgraded to ARN VIM IRM) pulled wholesale inventory stock levels from the AAVS DataMart to determine ship-points (depots or bill & hold locations) for the redistribution requests.

ARN VIM and ARN IRM operate outside the AFCIIF firewall, and personnel do not require access to the AFCIIF Local Area Network (LAN) or the campus area network (CAN). The AFCIIF's procedures have remained the same, with the addition of periodic inventory using handheld terminals and the entry of receipts and adjustments directly into ARN IRM.

AFCIIF personnel have full visibility of DSCP's wholesale-local inventory. This is provided through the Virtual Item Manager (VIM) Internet browsing capability into the Apparel Asset Visibility System (AAVS) DataMart. Finally, AdvanTech uses Virtual Prime Network with Ultra-VNC software to the ARN IRM local server and individual workstations for the purpose of accomplishing user support and system software maintenance.

4.0 Current Operations & Processing

Air Force Clothing Initial Issue Flight (AFCIIF) operates the facility and performs the function of providing training and dress uniforms to approximately 45,000 male and female Air Force recruits per year. Uniform items are procured and stocked under an Air Force Stock Fund Appropriation with materials management functions performed with the Standard Base Supply System. The AFCIIF performs all functions related to inventory management and control.

4.1 Organization and Manpower

The AFCIIF is part of the 37th Logistics Readiness Squadron (37th LRS). The AFCIIF consists of a Command Group, a Male Issue Section, a Female Issue Section, a Quality Assurance Evaluators (QAE) Section, a Stock Control Section, Storage and Issue Section, a Monetary Section, a Computer Support Section, a Recovery Section, and a Receiving Section.

All functions, except for Receiving, are housed in Building 5725, constructed for the purpose of providing uniform support for recruits. The Receiving function is performed at the central receiving because the loading dock of the AFCIIF is not able to accommodate the height of the delivery trucks.

4.1.1 Organizational Chart and Staffing Level

Figure 4 below, shows the relationship of the different staffing units responsible for clothing and uniform supply chain management activities at Lackland Air Force Base.

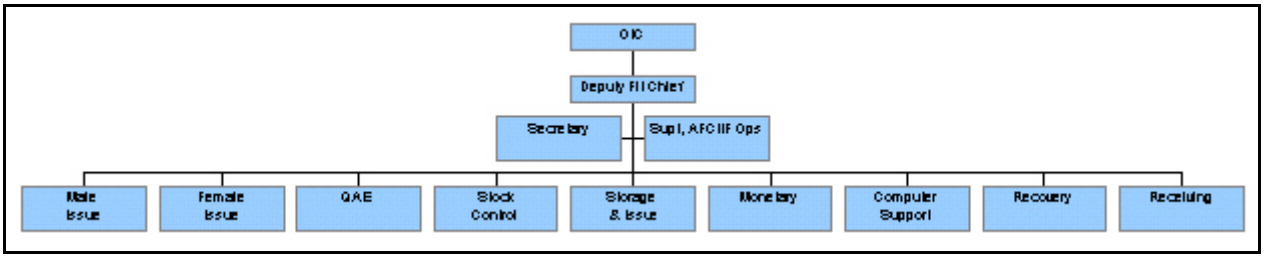


Figure 4: Organizational Chart

The staffing levels at the time of the initial site visit are shown in Table 2, below:

Category	Authorized	Assigned
Military Labor	29	24
Civilian Labor	17	19
Total Labor	**46**	**43**

Table 2: Military and Civilian Labor Force Breakdown

4.1.2 Command Group

This section provides the daily operational guidance and control of the AFCIIF. The section is authorized four civilian employees.

4.1.3 Male Issue Point

This section issues the basic training uniform and the dress uniform to male recruits. The section is authorized six military personnel.

4.1.4 Female Issue Point

This section issues the basic training uniform and the dress uniform to female recruits. The section is authorized four military personnel.

4.1.5 Quality Assurance Evaluators

This section reviews the fit of the uniforms and authorizes contract tailors recommended alterations. This section is authorized six civilian employees.

4.1.6 Stock Control Section

This section provides inventory management, control, and replenishment action using the current legacy materials management system. This section is authorized four civilian employees.

4.1.7 Storage and Issue Section

This section maintains the bulk stores warehouse and replenishes the male and female issue points. This section is authorized eight military personnel and two civilian employees.

4.1.8 Monetary

This section provides the fiscal accounting for the current Stock Fund appropriation that is used to procure uniform items from DSCP. This section is authorized two civilian employees

4.1.9 Computer Support

This section provides technical assistance and support for installed Air Force-owned computer hardware and software. This section is authorized one civilian employee.

4.1.10 Recovery

This section processes and accounts for uniform items recovered from recruits who are discharged from training. This section is authorized one civilian employee and one military person.

4.1.11 Receiving

This section receives and processes inbound shipments of clothing items, and delivers processed items to the bulk storage warehouse. The section is authorized 5 civilian employees.

4.1.12 Trainee Augmentation

On Wednesday, Thursday, and Fridays of typical issue weeks, the AFCIIF is augmented with approximately 20 recruits per day who perform limited, supervised tasks in assisting with the issue process. On those days, the AFCIIF is processing male and female recruits through the First and Second Issues simultaneously.

4.2 Trainee Uniform Issues

LAFB maintains three points of distribution to support uniform issues to recruits: Bulk Storage; Female Issue Point; and, Male Issue Point. All distribution points are housed in Building 5725. The building was specifically designed for the purpose of clothing recruits.

The building also provides office space for the clothing management staff, and a substantial tailoring and seamstress processing area – provided through an outside contractor.

4.2.1 Schedule of Uniform Issue Processing

The AFCIIF supports both a First Issue and a Second Issue for female and male recruits. The First Issue consists the Battle Dress Uniforms (BDUs) and the Physical Conditioning (PC) Uniform. The Second Issue consists of the Dress Uniform. The standard issue schedule is contained in the table below.

Issue Event	Type of Uniform	Week	Freq	Time Allotted	Trainee per Flight	Flights per Week
Female First Issue	BDUs and PC	1	W-F	3 Hrs	35-60	3
Male First Issue	BDUs and PC	1	W-F	3 Hrs	35-60	10-20
Female Second Issue	Service Uniform	3	M-F	8 Hrs	35-60	5
Male Second Issue	Service Uniform	3	M-F	8 Hrs	35-60	8-20

Table 3: Clothing Issue Appointments

4.2.2 Female Issue Point

The Female Issue Point is located in the main AFCIIF facility, Building 5725. The Issue Point provides sufficient shelves and other storage space to maintain stocks for both the First Issue and Second Issue.

The Female First Issue is completed throughout the day, Wednesday through Friday, at the rate of one Flight per day. The normal time allotted is three hours; however the issue is typically accomplished in approximately one hour. The recruits begin the process by being issued a duffle bag, the Physical Conditioning uniform, and finally the BDUs. At the end of the process, the recruits are formed in a shake down area where small items such as the belt and buckle have been pre-staged. Sizing is done during the issue process of each sized item. After the shake down, the recruits complete the Scantron issue form as a mass exercise. The items and value of the first issue are displayed in the table below:

NSN	PGC	ITEM	Qty	Std Price	Ext Price
8465-01-117-8699	17632	Bag, Duffel, Nylon, OG	1	$18.30	$18.30
8440-01-181-4410	01657	Belt, Cotton, Web, Blue, w/Black Clip	1	$2.05	$2.05
8430-01-198-1354	01895	Boots, Combat, Mildew & Water Resistant	2	$79.65	$159.30
8315-00-300-0327	10001	Buckle, Belt, Black	1	$0.45	$0.45
8415-01-134-3175	01694	Cap, Camouflage Pattern	1	$7.10	$7.10
8415-01-393-7813	02255	Cap, Woodland Camouflage Pattern, Enhanced Hot Weather	1	$4.15	$4.15
8415-01-084-1639	01695	Coat, Camouflage Temperate (BDU)	2	$23.00	$46.00
8415-01-390-8537	02253	Coat, Camouflage, Enhanced HW BDU	2	$26.65	$53.30
8440-01-161-7119	01834	Gloves, Leather, Blk, Unisex	1	$16.95	$16.95
8435-01-446-1889	02399	Running Shoe, Women's, Air Force	1	$41.90	$41.90
8440-01-415-0051	02275	Sock, Liner, Poly/nyl, Black	4	$1.40	$5.60
8440-01-053-6768	00304	Sock, Men's, Cushion Sole, Stretch Type, Black	4	$1.45	$5.80
8415-01-448-2213	02410	Socks, Athletes, Crew, White (3 Pair Package)	2	$2.25	$4.50

8415-01-407-2176	02263	Sweatpants, Ctn/Poly, Gray	2	$9.10	$18.20
8415-01-407-2708	02264	Sweatshirt, Ctn/Poly, Gray	2	$8.05	$16.10
7210-01-286-0983	10097	Towel, Bath, Cotton, White	2	$3.95	$7.90
8415-01-390-8554	02252	Trousers, Enhanced HW BDU	2	$27.80	$55.60
8415-01-084-1705	01703	Trousers, Temperate (BDU)	2	$25.30	$50.60
8415-01-407-3252	02266	Trunks, General Purpose, Ctn/Poly, Gray	3	$6.55	$19.65
8415-01-407-3231	02265	T-Shirt, Athlete, Ctn/Poly, Gray	3	$4.20	$12.60
8420-01-112-1472	01770	Undershirt, Man's, Qtr. Sleeve, Brown	5	$3.35	$16.75
Total for this issue					**$562.80**

Table 4: Female First Issue Components

The Female Second Issue commences at 0630 Monday through Friday, with typically one flight per day. Females are directed to shelving locations and open containers of uniform issue items and are asked to try samples on to find a size that fits most closely. Once each item is selected, the recruit is reviewed by a Quality Assurance Evaluators for proper fit, exchanges are done as required, then the recruit returns to the issue bins and selects the remaining quantity of that item.

The recruit then proceeds to the contract tailor. After the tailor has made markings for recommended alterations, the recruit returns to a QAE who reviews and authorizes the alterations to be done. It has been proven that this method most effectively fits the female recruit due to the wide variance in female measurements. When the final fitting process is completed, the recruit removes the issue, the Scantron form is completed to record the issue, and the items are turned over to the contract tailor. By 1630, all service uniforms are returned to the recruit with alterations complete and the recruits leave the facility. The items and value of the second issue displayed in the table below:

NSN	PGC	ITEM	Qty.	Std Price	Ext Price
8440-01-181-4411	00024	Belt, Cotton, Web, Blue, w/Chromuim Plate	1	$2.20	$2.20
8315-01-413-7833	21281	Buckle, Belt, Chromium Plated	1	$2.75	$2.75
8410-01-381-5559	02243	Cap, Garrison, Poly/Wool, Serge,Blue, AF Shade 1620	1	$6.35	$6.35
8410-01-175-2252	01959	Coat, All Weather. w/Removable Liner	1	$75.00	$75.00
8410-01-378-0030	02236	Coat, Service, Wl/Pl, Serge, 10 oz, Blue, AF Shade 1620	1	$77.50	$77.50
8455-01-112-7681	37095	Insignia, BOS, US	1	$0.75	$0.75
8455-01-345-4463	21278	Insignia, Distinguishing, USAF, Khaki, Desert	5	$0.90	$4.50
8455-01-345-4462	21274	Insignia, Distinguishing, USAF, Olive Green, Subdued	5	$0.15	$0.75
8410-01-299-9536	02089	Jacket, Woman's, Lightweight with Removable Liner	1	$60.80	$60.80
8445-01-375-8394	21100	Neck Tab, Blue, AF Shade 1622	2	$3.00	$6.00
8410-01-378-4004	02240	Shirt, Cotton/Poly, Long Sleeve, AF Shade 1550, (Tuck-in)	3	$13.60	$40.80
8410-01-378-2906	02241	Shirt, Cotton/Poly, Short Sleeve, AF Shade 1550, (Tuck-in)	3	$13.95	$41.85
8435-01-456-1553	02451	Shoe, Women's, Dress Leather	1	$41.30	$41.30
8410-01-441-4602	02350	Skirt, Darted, Wool/Poly, Serge, 10 oz., AF Sh 1620	2	$29.40	$58.80

8410-01-443-3010	02353	Slacks, Darted, Wool/Poly, Serge, 10 oz., AF Sh 1620	2	$32.35	$64.70
8455-01-071-7475	17314	Standard AF Name Tag, Ind, Blue, Plastic	2	$0.80	$1.60
8315-00-231-8531	11430	Tape, Textile, Nylon, Plain Weave, Olive Drab, Subdued, 1" Width	5	$0.20	$1.00
8315-01-302-7141	91246	Tape, Textile, Nylon, Tan, Desert 1" Width	5	$0.25	$1.25
Total for this issue					**$487.90**

Table 5: Female Second Issue Components

4.2.3 Male Issue Point

The Male Issue Point is located in the main AFCIIF facility, Building 5725. The Issue Point provides sufficient shelves and other storage space to maintain stocks for both the First Issue and Second Issue.

The Male First Issue in completed throughout the day, Wednesday through Friday, at the rate of up to 10 Flights per day. The normal time allotted is three hours; however the issue is typically accomplished in approximately one hour. The recruits began the process by being issued a duffle bag, the Physical Conditioning uniform, and finally the BDUs. At the end of the process, the recruits are formed in a shake down area where small items such as the belt and buckle have been pre-staged. Sizing is done during the issue process of each sized item. After the shake down, the recruits complete the Scantron issue form as a mass exercise. The items and value of the first issue are shown in the table below:

NSN	PGC	ITEM	Qty	Std Price	Ext Price
8465-01-117-8699	17632	Bag, Duffel, Nylon, OG	1	$18.30	$18.30
8440-01-181-4410	01657	Belt, Cotton, Web, Blue, w/Black Clip	1	$2.05	$2.05
8430-01-198-1354	01895	Boots, Combat, Mildew & Water Resistant	2	$79.65	$159.30
8315-00-300-0327	10001	Buckle, Belt, Black	1	$0.45	$0.45
8415-01-134-3175	01694	Cap, Camouflage Pattern	1	$7.10	$7.10
8415-01-393-7813	02255	Cap, Woodland Camouflage Pattern, Enhanced Hot Weather	1	$4.15	$4.15
8415-01-084-1639	01695	Coat, Camouflage Temperate (BDU)	2	$23.00	$46.00
8415-01-390-8537	02253	Coat, Camouflage, Enhanced HW BDU	2	$26.65	$53.30
8420-00-009-2347	00293	Drawers, Cotton, Briefs, White	6	$1.45	$8.70
8440-01-161-7119	01834	Gloves, Leather, Blk, Unisex	1	$16.95	$16.95
8430-01-445-8402	02398	Running Shoe, Man's, Air Force	1	$41.90	$41.90
8440-01-415-0051	02275	Sock, Liner, Poly/nyl, Black	4	$1.40	$5.60
8440-01-053-6768	00304	Sock, Men's, Cushion Sole, Stretch Type, Black	4	$1.45	$5.80
8415-01-448-2213	02410	Socks, Athletes, Crew, White (3 Pair Package)	2	$2.25	$4.50
8415-01-407-2176	02263	Sweatpants, Ctn/Poly, Gray	2	$9.10	$18.20
8415-01-407-2708	02264	Sweatshirt, Ctn/Poly, Gray	2	$8.05	$16.10
7210-01-286-0983	10097	Towel, Bath, Cotton, White	2	$3.95	$7.90
8415-01-390-8554	02252	Trousers, Enhanced HW BDU	2	$27.80	$55.60

8415-01-084-1705	01703	Trousers, Temperate (BDU)	2	$25.30	$50.60
8415-01-407-3252	02266	Trunks, General Purpose, Ctn/Poly, Gray	3	$6.55	$19.65
8415-01-407-3231	02265	T-Shirt, Athlete, Ctn/Poly, Gray	3	$4.20	$12.60
8420-01-112-1472	01770	Undershirt, Man's, Qtr. Sleeve, Brown	5	$3.35	$16.75
Total this issue					**$571.50**

Table 6: Male First Issue Components

The Male Second Issue commences at 0630 Monday through Friday, with typically three Flights per day. Males are directed to shelving locations with open containers of issue items and are asked to try samples on to find a size that fits most closely. Once each item is selected, the recruit is reviewed by a QAE for proper fit, exchanges are done as required, then the recruit returns to the issue bins and selects the remaining quantity of that item.

The recruit then proceeds to the contract tailor. After the tailor has made markings for recommended alterations, the recruit returns to a QAE who authorizes the alterations to be done. When the final fit is complete, the recruit removes the issue, the Scantron form is completed to record the issue, and the items are turned over to the contract tailor. By 1630, all service uniforms are returned to the recruit with alterations complete and the recruits leave the facility. The items and value of the second issue are shown in the table below:

NSN	PGC	ITEM	Qty	Std Price	Ext Price
8440-01-181-4411	00024	Belt, Cotton, Web, Blue, w/Chromuim Plate	1	$2.20	$2.20
8315-01-413-7833	21281	Buckle, Belt, Chromium Plated	1	$2.75	$2.75
8405-01-375-8974	02239	Cap, Garrison (Flight cap), AF SH 1620	1	$9.75	$9.75
8405-01-174-5117	01958	Coat, All Weather w/Removable Liner	1	$77.90	$77.90
8405-01-375-5649	02233	Coat, Service, Wl/Poly, Serge, 10 oz, AF Shade 1620	1	$81.05	$81.05
8455-01-112-7681	37095	Insignia, BOS, US	1	$0.75	$0.75
8455-01-345-4463	21278	Insignia, Distinguishing, USAF, Khaki, Desert	5	$0.90	$4.50
8455-01-345-4462	21274	Insignia, Distinguishing, USAF, Olive Green, Subdued	5	$0.15	$0.75
8405-01-298-6881	02088	Jacket, Man's, Lightweight with Removable Liner	1	$66.00	$66.00
8440-01-381-5531	21099	Necktie, Mn's Four-in-Hand	2	$3.50	$7.00
8405-01-212-7428	01906	Shirt, Cotton/Poly, Long Sleeve, W/Epaulets	3	$13.65	$40.95
8405-01-262-4533	02016	Shirt, Cotton/Poly, Short Sleeve	3	$11.60	$34.80
8430-01-456-0156	02450	Shoe, Men's, Dress Leather	1	$42.35	$42.35
8455-01-071-7475	17314	Standard AF Name Tag, Ind, Blue, Plastic	2	$0.80	$1.60
8315-00-231-8531	11430	Tape, Textile, Nylon, Plain Weave, Olive Drab, Subdued, 1" Width	5	$0.20	$1.00
8315-01-302-7141	91246	Tape, Textile, Nylon, Tan, Desert 1" Width	5	$0.25	$1.25
8405-01-378-0011	02234	Trousers, Wl/Poly, Serge, 10oz, AF Shade 1620	4	$34.55	$138.20
8420-01-194-0914	01892	Undershirt, Man's, White, V-Neck	5	$2.30	$11.50
Total for this issue					**$524.30**

Table 7: Male Second Issue Components

4.2.4 Trainee Flows Through The Issue Points

Appendix D contains charts illustrating the flow of male and female recruits through the First and Second Issue events.

4.2.5 Number of Trainees Processed

The charts below depict the number of recruits processed at First Issue and Second Issue, both by month for fiscal year, and also as a total by fiscal year. Trainee loads follow a similar pattern as experienced by both the US Army and the US Marine Corps Recruit Training Centers.

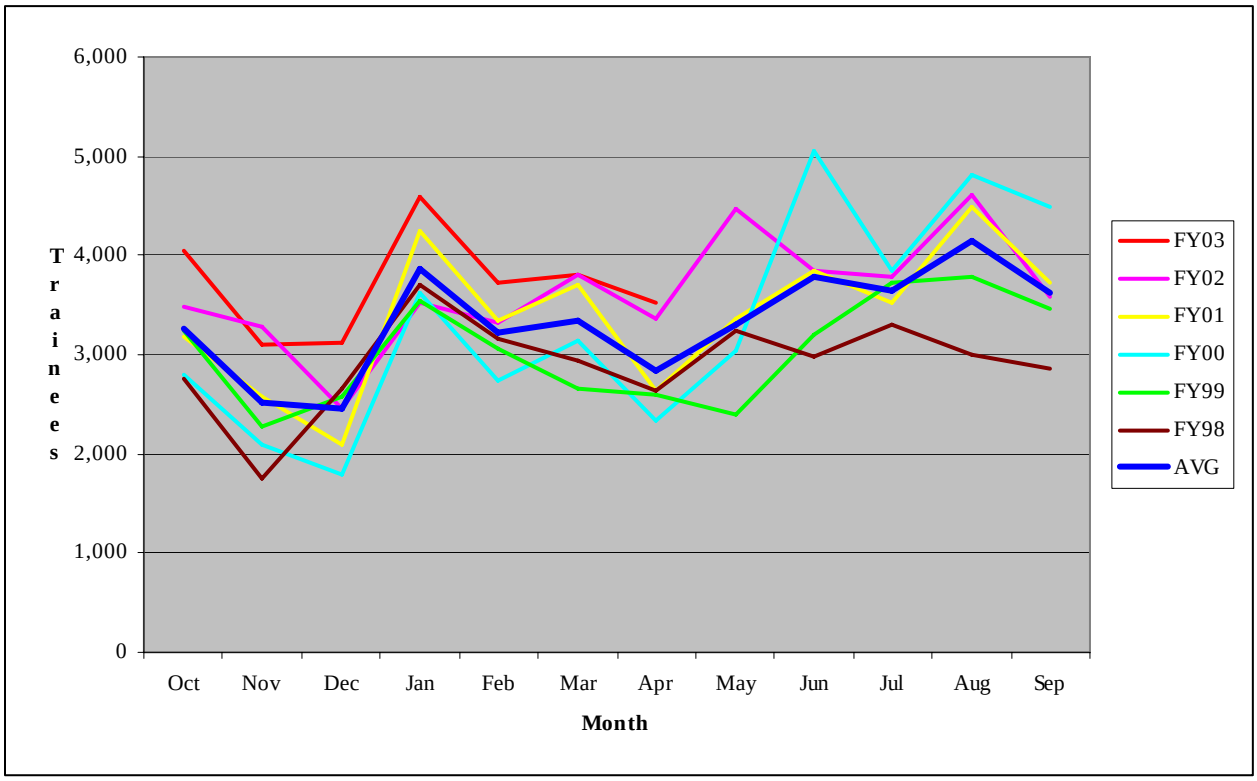


Chart 1: Number of Trainee First Issues By Month By Fiscal Year

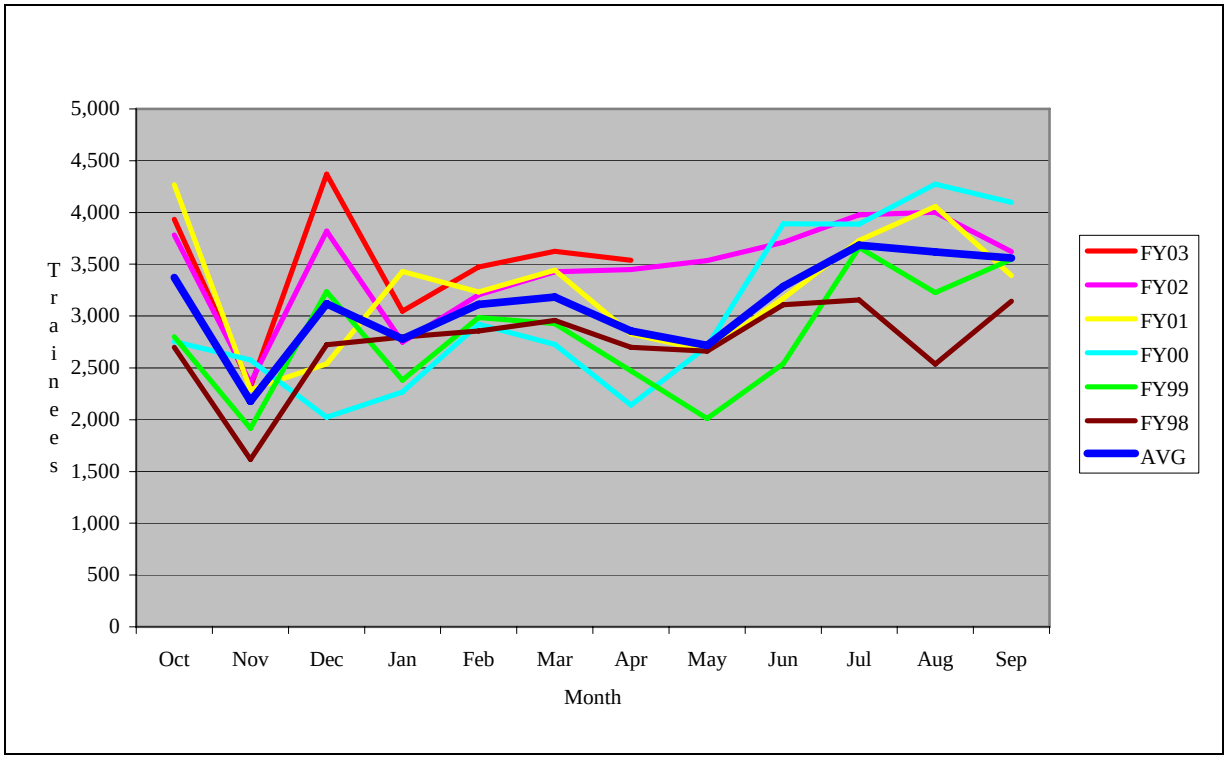


Chart 2: Number of Trainee Second Issues By Month By Fiscal Year

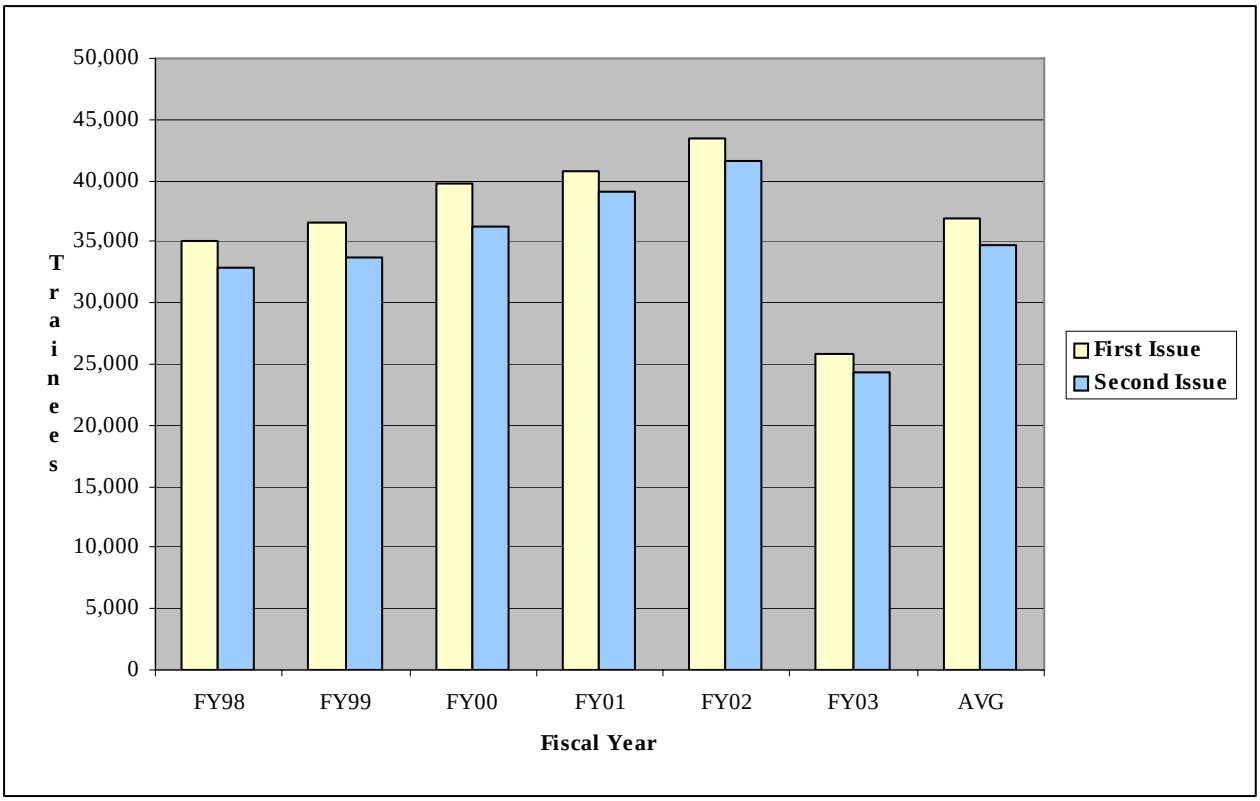


Chart 3: Number of Trainees By Issue By Fiscal Year

4.3 Information Systems

4.3.1 Standard Base Supply System

The Standard Base Supply System (SBSS) is the US Air Force legacy stock fund materials management system. Line item accounting is maintained on assets in bulk storage, with money value only accounting utilized when the assets are transferred to the issue points. It provides requirements determination through the use of established reorder points that are calculated on movements from the bulk storage area to the issue points. Requisitioning is done by standard MILSTRIP funded documents electronically transmitted to DSCP (S9T) with local inventory managers monitoring requisition status. Receiving is done by manually entering the receipt information, such as document number, quantity, and receipt date, from the shipping document. Inventories are conducted on a semi-annual basis to adjust the on hand balances. Hand held input devices are not in use with the SBSS.

The use of the SBSS system was discontinued for support of recruit clothing requirements after the go-live of the Apparel Research Network Integrated Retail Module system.

4.3.2 Clothing Information Management System (CIMS)

The Clothing Information Management System (CIMS) is in use to track issue data and utilizes the Scantron issue forms for capturing issue information. CMIS provides issue capture by use of a Scantron form, inventory information, and creates sales data information by NSN. This system is a stand-alone and does not interface with any other system is use at the AFCIIF.

4.3.3 Scantron Forms

The AFCIIF uses four Scantron forms, commonly called "bubble sheets", to collect issue data. Separate forms are used for the male first and second issue, and an additional form is used for each female first and second issue. After the issue process is completed, the forms are filled out as a mass exercise under supervision of Issue Point personnel.

Changes to the forms must be done by the Scantron company. Also, Scantron prints the forms at a cost of $50.00 per thousand. Annual form printing costs approximate $4,500.00 per year.

4.4 Stock Levels and Stock Usage

4.4.1 Warehouse Facilities/Replenishment

Inbound shipments are received at Building 5160, primarily because the loading dock at the AFCIIF is not equipped with an adjustable dock plate to accommodate varying truck bed heights delivering material. Receiving personnel process the shipments, then deliver the product and the shipping documents to the AFCIIF building for put-away in bulk storage and to enter the receipt documents into the legacy system.

Issue Point personnel request replenishment from bulk storage via the legacy system. The movement of stock out of bulk inventory was used as the trigger to initiate replenishment action, which could occur days and even months before the stock was issued.

4.5 LAFB Decapitalization Concerns

4.5.1 LAFB Pre-Go Live Draw Down Plans

The intent of the AFCIIF was to draw down the AFCIIF inventory to a level below $1 million, or ***less than 8 days of supply at the then current consumption rates***. To achieve that objective, the AFCIIF planned to move all stocks from the bulk warehouse to the issues stations and minimize the inventory that was returned to DSCP Capitalization/Decapitalization.

The AFCIIF stopped submitting A0A order documents, via their legacy system, during September 2003. On 27 September the AFCIIF cancelled all due-ins that do not have positive shipping (SS) status.

At the time of the site visit, the AFCIIF was holding approximately 21 days of supply, and were experiencing shortages in certain stock numbers. This situation no longer exists today as AdvanTech and LAFB AFCIIC personnel work closely with the DSCP Item Managers using ARN VIM and ARN IRM to maintain high customer satisfaction levels.

5.0 ARN VIM IRM Implementation at LAFB AFCIIF

This section outlines the approach for establishing the integrated retail module system at the LAFB AFCIIF along with the relative order for the sequence of implementation activities. The approach provided the necessary capability to transfer the inventory ownership to DSCP with full asset visibility, and to provide the capability for the AFCIIF to perform inventory control and management operations as a wholesale local entity of DSCP.

5.1 Project Approach Overview

This section provides an overview of the steps and actions involved in the implementation of the ARN VIM at the AFCIIC. Appendices to this report, as indicated, address pertinent implementation actions and technical requirements.

Initially the existing business practices and systems were examined and described. A complete description of the task list and implementation timeline was provided to the LAFB AFCIIF.

- The project team that conducted the analysis, evaluated the requirements, and implemented the ARN VIM and ARN IRM at LAFB AFCIIF is shown in Appendix A.

- Site Survey Process and Checklist. The AdvanTech project team conducted a three-day site survey, 10-13 June 2003, at the LAFB AFCIIF, which included an orientation briefing, a discussion of the project objectives and an explanation of the implementation schedule. The agenda and site survey checklist used at LAFB AFCIIF for the initial site visit are shown in Appendix C. The following is a sequence of events during the site survey:

    - Initial introductions were made and working relationships were established.

    - Reviewed system pre-installation set-up process at AdvanTech

    - Reviewed weekly on-site set-up and training process.

    - Reviewed the implementation task list including:

        - Automating receiving,
        - Automating stock movements and issues,
        - Physical inventory functions with HHTs, Bar Code Technology & Radio Frequency (RF) communications,

- Incorporating recruit identification into scan forms to capture recruit issues,
- Scan Forms – preprint recruit ID in bar code format to increase accuracy and processing speed,
- Integrating data entry by using optical imaging issue forms & electronic document management system,
- Acquiring ISDN line, an ISP, and a wiring contractor,
- Stringing wire between the ARN Server and scan form printers, test, train,
- Implementing ARN VIM and ARN IRM for DSCP central management of recruit clothing, and
- Scheduled the physical inventory and DSCP capitalization of inventory for 26-28 September 2003 with GO-LIVE on 30 September 2003.

- Identified the ARN VIM IRM system administrator.
- Explained the ARN VIM IRM and Internet link to the AAVS Data Mart.
- Explained the Internet process and timing issues in coordination with other sites.
- Explained initial capitalization inventory process.
- Explained system security features, including separate menus for separate user types.
- Discussed process for clothing returns, adjustments to inventory.
- Discussed pre-conversion training process.
- Itemized need for multi-receptacle UPS, dedicated phone line, Internet connection, and anti-Virus software to be provided by the host site.
- Demonstrated inventory screens on laptop computer.
- Obtained floor plans for the AFCIIF, and coordinated placement of hardware and communication cable.

➢ Existing Operations & Processing at LAFB AFCIIF. The site survey provided a profile of LAFB AFCIIF before implementation of ARN – IRM, covering the following items, which are detailed in Paragraph 4.0.

- Organization and Manpower.
- Trainee Uniform Issues.
- Information Systems.
- Stock Levels and Stock Usage.
- LAFB Decapitalization Concerns.

➢ Trainee Flow Through The Issue Points. The existing flow of both male and female recruits is illustrated in Appendix D.

Project initiation was followed by a two-month period of requirements and as is process analysis, and development of the Lackland AFCIIF Implementation Report & Plan, that has been incorporated into the various sections of this FTR. The basis for the planning and implementation was the ARN IRM system that was prototyped at the Ft. Jackson Clothing Initial Issue Point (CIIP).

➢ During Week 1 of the implementation schedule the hardware and software components were installed and unit testing was initiated.

➢ Week 2 and 3 of the implementation included pre-conversion activities, initial training, and identification of local processes and procedures that required tailoring of the ARN IRM system.

➢ Upon completion of Week 4 a physical inventory of the LAFB AFCIIF assets was conducted, D6B transactions were created for transfer of LAFB AFCIIF stock back to the Defense Supply Center Philadelphia (DSCP). Similar transactions were used by LAFB AFCIIF to drop the inventory from accountability, which culminated in GO-LIVE on 1 October 2003.

➢ The week following GO-LIVE was dedicated to post-conversion activities, initial operation of the system, continued training, and support activities.

➢ The implementation of ARN VIM IRM, a web-based fully integrated supply chain management system, was followed by an extended period of direct support and training to ensure comprehensive knowledge of the system and attainment of the inventory reduction and a balanced flow of apparel items.

5.2 Establish ARN Local Area Network

A Local Area Network (LAN) was established to control and connect all functionalities of the IRM at LAFB AFCIIF. The ARN Local Area Network was connected to the ARN Single Server via the Virtual Private Network (VPN) protocols available as part of the Windows 2000 operating system. FTP protocols used as back-up for the VPN for remote connectivity for any troubleshooting, help and administrative support requirements.

5.2.1 Network Requirements

Due to Air Force internal network security restrictions the ARN IRM software package was installed on systems outside of the primary LAFB secure network. This necessitated the setup of a small local area network dedicated to support of the wholesale local inventory management project. This network connects the various workstations and other hardware used in inventory control and the wireless HHT systems.

AdvanTech installed and maintained this network. This local area network uses industry-standard 100-Base-T Ethernet interfaces and connects to the Internet via an Integrated Services Digital Network (ISDN) line to a commercial Internet Service Provider (ISP). A firewall system is employed to protect the local area network from unauthorized intrusion or disruption. The data flows out to ARN Asset Visibility System (AAVS) and other databases over the Internet, and AdvanTech has remote VPN access to the local area network for administration and troubleshooting purposes.

5.2.2 Overarching Architecture

The detailed diagram below shows the architecture of the data flows within the ARN Network. Steps 1 through 3 depict the wireless hand held scanners, network access points, and cable that connects the wireless equipment used for receiving, stock transfers from bulk storage to the issues points, and to conduct inventories. Steps 4 and 5 depict the hub and cables connecting the wireless activities and scan form function to the server. Steps 6 and 7 depict the server and the router that provides firewall security for the ARN LAN. Step 8 depicts the ISDN line and ISP connection outside of the ARN LAN firewall.

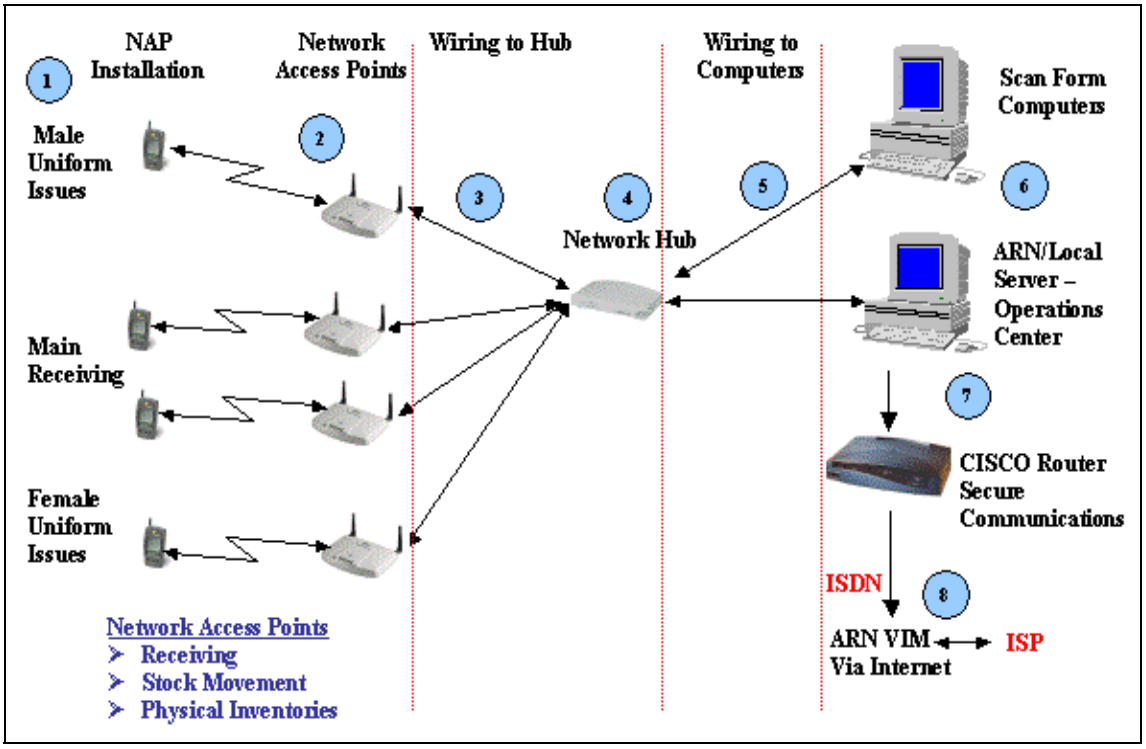


Figure 5: ARN Network Data Flow Architecture

5.2.3 Communications and Internet Service Provider

Communications with the ARN LAN is required to establish the VPN link and to perform system administrator functions. From lessons learned at other ARN sites, standard telephone dial-up service linkage proved unreliable and too slow to support large data transfers and to perform system administration functions. DSL service was not available to the AFCIIF building, leaving ISDN as the only viable option for fast, reliable communications and connectivity.

Three options for ISDN and Internet service provider (ISP) were considered as shown in the following table:

Option	Description	Advantages	Disadvantages
A	Contract Services from Defense Information Systems Agency via LAFB	Inexpensive, one-time cost of $140; equipment costs of $400; and monthly charge of $52.27.	173 days from order generation to service activation; DISA firewall and security considerations; sharing bandwidth with other users

B	LAFB contracted services with TexasNet which provides connectivity for non-military activities, such as entertainment and the library, aboard the Base	One time equipment cost of $3000, plus installation of wire from cable head to server hub.	Expensive; Service availability and trouble calls controlled by LAFB; sharing bandwidth with other users
C	Contract with independent ISDN/ISP provider (SouthWest Bell)	Inexpensive; one-time order processing cost of $78; circuit design fee of $250 which is waived if 2-year contract is signed; inside wiring cost from cable head to hub server of $140; $53.94 per month for unlimited local call use; technical support for any router that meets National1 or NTJ standards	No significant disadvantages identified

Table 8: ISDN and ISP Options

Option C was selected for overall cost and flexibility. Southwest Bell required a 30-day advance agreement to provide services. The date for service installation and availability was 1 September 2003.

AdvanTech requested the AFCIIF to submit Form AF 3215 to the 37th Communications Squadron (Commercial Communications Office) requesting installation of cable pairs from Building 1050 to the cable head in Building 5725. Per the Commercial Communications Office, all commercial demarks terminate at Building 1050, and could be extended to other buildings as necessary. The demark was extended to Room 1133, Building 5725. LAFB provided the path from Building 1050 to the cable head in Building 5725 and the commercial contractor installed the cable from the cable head to Room 1133.

5.2.4 Local Area Network (LAN) Cable Requirements

The chart below displays the internal cabling that was necessary to connect the hardware that comprises the ARN LAN at LAFB. Step 1 is the ISDN line in Room 1133. Steps 2 and 3 display the hub, router, and server. Steps 4 through 8 display the connectivity of the hardware to produce and process the scan forms, provide access to the VIM website, and for the HHT docking station. Step 9 is the connectivity to the wireless network access point. Step 10 displays cable drops – or runs – to the male and female issue points. These were left above the false ceiling for possible future use if the scan form workstations are moved to the issue points.

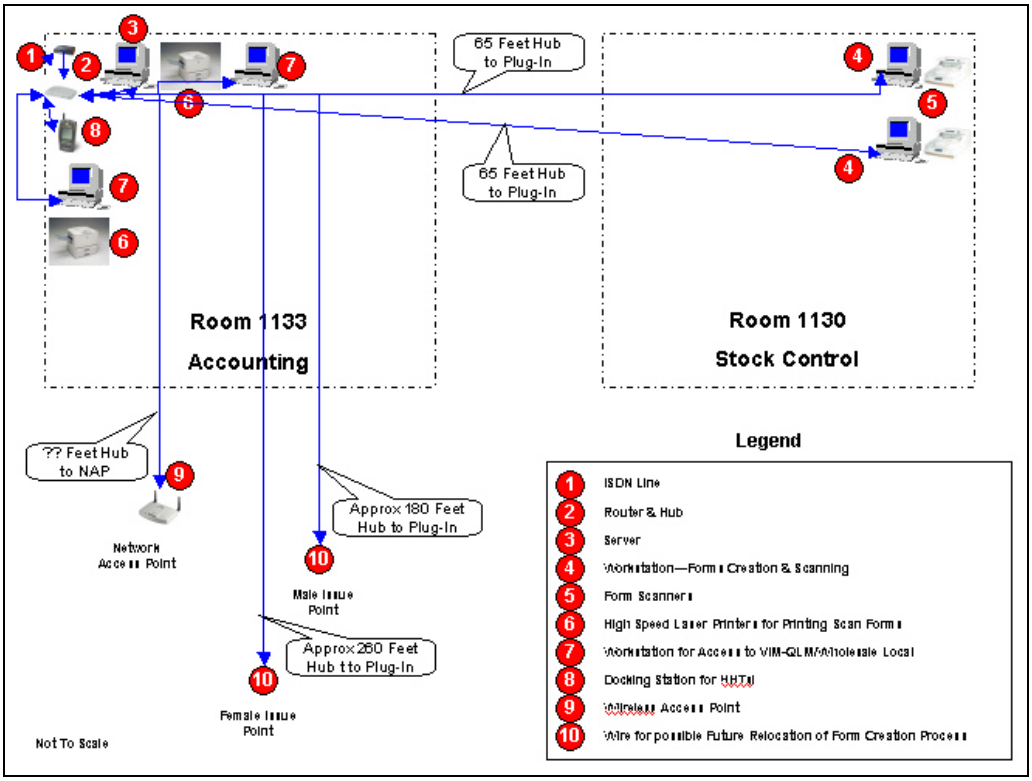


Figure 6: LAN Cable Requirements

5.2.5 Equipment List and Power Requirements

The table below provides a general listing of the hardware used to establish the ARN LAN. Detailed information on hardware and software, such as make and model, and other technical specifications are contained in Appendix F.

Room #	Item	Qty
1130	Workstation: Pentium 4, 256K RAM, 40GB HD, CD-ROM, 10/100 LAN, 17 inch monitor, keyboard and mouse	2
1130	Scanner: Panasonic KV-S6045 (ARN Standard at other sites)	2
1130	Surge Protector	1
1133	Server: Pentium 4, 512K RAM, 80GB HD with 8MB buffer, CD-ROM, CD-RW, Tape Drive, 10/100 LAN, 17 inch monitor, keyboard and mouse	1

1133	Workstation: Pentium 4, 256K RAM, 40GB HD, CD-ROM, 10/100 LAN, 17 inch monitor, keyboard and mouse	2
1133	Laser Printer: 15ppm, first page in 10 seconds, 1200x1200 dpi (Hewlett Packard 1200 or equivalent)	2
1133	Router: Cisco Model 1721	1
1133	Hub: 8 hubs capacity	1
1133	Uninterrupted Power Supply	1

Table 9: Hardware List

5.2.6 Firewall, Security, and Passwords

The Cisco 1721 Modular Access Router is used as the interface between the wholesale local issues ARN LAN and the Internet. The Cisco 1721, powered by the industry-standard Cisco IOS software, delivers high performance, security, and maintainability for small to moderate sized networks.

The 1720 Modular Router series supports multiple WAN connection methods (cable, DSL, ISDN, T1, satellite) through the use of modular expansion cards called WICs (WAN Interface Cards). The 1721 model features two WIC slots, allowing the use of multiple uplink methods. The Cisco 1721 also offers all required router features for supporting the local area network.

VPN functionality enables secure remote access to all computers on the network from AdvanTech headquarters, allowing remote administration and maintenance of the local LAN. The Cisco IOS Firewall allows local users safe access to the Internet while preventing unauthorized external users from gaining access to local resources, while also detecting and protecting against Denial-of-Service attacks.

Connection of multiple computers to the internal port required a hub. A 10/100 8-port hub was installed. Standard Category 5 twisted pair Ethernet cables were used to connect all computers, hubs, and routers for the local area network

5.3 Implement ARN VIM IRM Functionality

5.3.1 Overview

The Internet Based system was installed to provide the AFCIIF users with an on-line, real-time integrated application that provides current stock position almost immediately (near real-time) after the transactions (Receipts, Issues and Adjustments) are transmitted. The VIM/Wholesale Local reports were created to provide the AFCIIF Personnel as well as the DSCP item managers with an immediate picture of the current stock status.

5.3.2 Implementation

Access to VIM/Wholesale Local was provided through the four workstations attached to the ARN LAN server with appropriate log-ins and passwords. The two workstations located nearest the server in Room 1133 were designated as the primary access to the VIM/Wholesale Local. The workstations are utilized to print scan forms serving as secondary access. The workstations in Room 1130 are used to process/scan the scan forms after the issues have been completed. An icon for activating the VIM website was placed on each workstation. Access is also available through any Internet-connected workstation on LAFB.

5.3.3 Security

User IDs and Passwords control data entry to VIM/Wholesale Local. AdvanTech manages the ARN Local Server network for the site. VPN access is controlled through Windows 2000 user security. Only authorized users are authorized to send data to the ARN Virtual Item Manager system.

5.3.4 Data Flow

The diagram below details the dataflow at the LAFB AFCIIF after implementation of ARN VIM and ARN IRM. Steps 1 through 7 represent the collection of the issue, receipt and adjustment data. This data is staged on the Local ARN Network Server and then pushed, through the ARN Local Network firewall, to the VIM/Wholesale/ASTRA databases on the ARN Single Server. The ARN LAN is connected to the Single Server via the Virtual Private Network (VPN) communication protocols.

Steps 8 through 11 represent the data flow from the ARN Local Server to the ARN Single Server and to and from C&T SAMMS. As the data arrives in the Single Server, the VIM/Wholesale Local database is updated and the revised stock status is reflected through the VIM/Wholesale Local Reports.

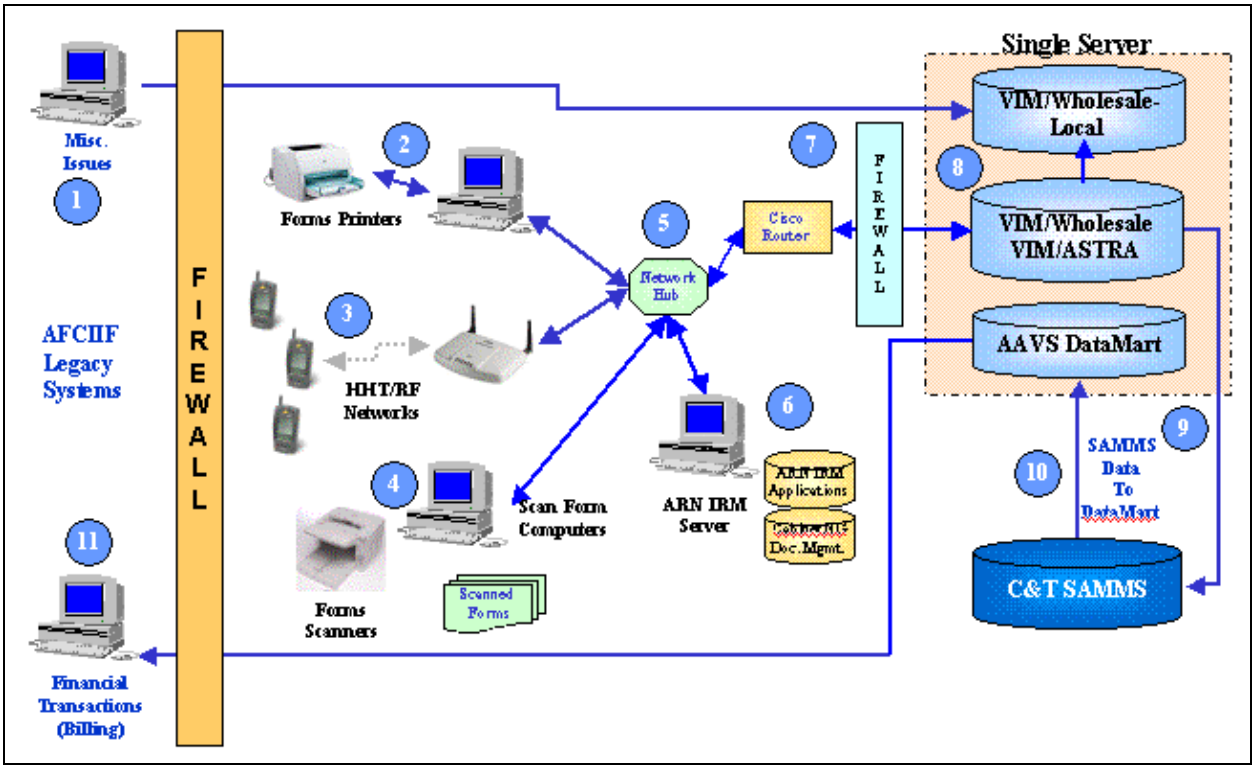


Figure 7: ARN VIM and ARN IRM Data Flows

5.3.5 Network Requirements

The ARN LAN is connected to the ARN Single Server via the Virtual Private Network (VPN) as part of the Windows 2000 operating system. FTP protocol and PC/Anywhere will be used as back-ups for the VPN.

5.3.6 Hardware Description and Power Requirements

See Table 3 in Section 4.1.5.

5.4 Radio Frequency Networking of Inventory Data

5.4.1 Overview

Wireless and handheld terminals were installed to automate the functions of receiving, stock transfers and inventory counts.

ARN used the Symbol Palm 1846 handheld terminal (HHT) with the Symbol Spectrum 24 Access Point for a Radio Frequency network configuration in its implementation at LAFB AFCIIF.

5.4.2 Implementation

Network and hardware setup began after the cabling was completed in Building 5725. A Symbol representative installed the Network Access Points (NAPs) and additional hardware.

Training on the maintenance and use of the handheld terminals and the network access point was conducted after implementation. Training consisted of: (1) a general overview of the equipment; (2) how to use a Palm HHT; (3) how to process receipts, stock movements, and physical inventories using the Palm HHT; (4) how to load software updates to the handheld; and, (5) how to troubleshoot the NAPs.

5.4.3 Security

RF Network Access Point. The Network Access Point are restricted to the static handheld and PCMCIA card handheld and PCMCIA card Machine Address Code (MAC). The MAC Address Filtering is used by the NYSE and AMEX to secure their networks. No rogue handheld or wireless device can transmit data over the Network Access Point.

Windows 2000, Login. Network login was granted LAFB AFCIIF personnel by user id, password and authorized device/computer name. No authorized user can use an unauthorized device to access the network.

Windows 2000, Time of Day Access. User and time parameters are used to limit network access. This prevents users from accessing the network during non-duty hours.

Palm 1846 HHT. A user ID and password is required in order to turn on the HHT. This prevents an unauthorized user from using an authorized device to access the network

Palm and PCMCIA Data Encryption/Decryption. The Advanced Encryption Standard (AES), the most modern and trusted encryption algorithm, was installed to encrypt sensitive data. This prevents user login, password and application data from being intercepted and deciphered.

Tables with SSN and User IDs and Passwords. Tables containing either SSN or userid and password are locked with an additional password. This prevents unauthorized access to sensitive database tables.

ARN VIM IRM Updates. Programs for the Palm HHTs used to update inventory data will require a separate VIM- IRM login and password. This prevents unauthorized users from modifying inventory data.

5.4.4 Data Flow

Receipt data, stock movement data and physical inventory data are transmitted from the handheld to the ARN/Local server as shown in the following diagram.

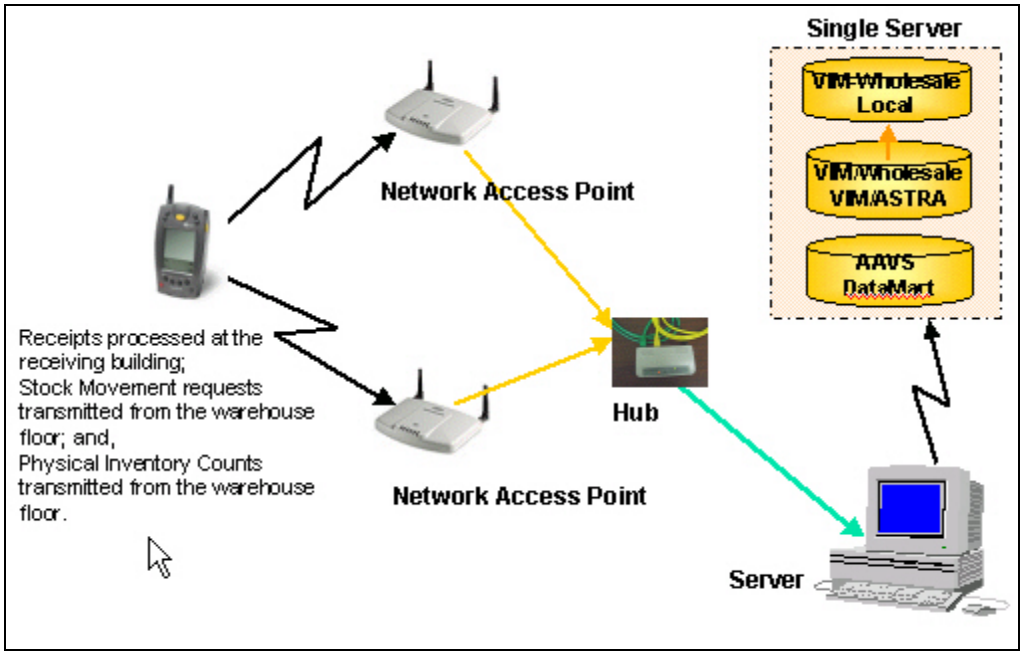


Figure 8: Wireless HHT Data Flow

5.5 Integration of AutoData Scan Forms

5.5.1 Overview

The AutoData Scan application is used to capture detailed issue data for Defense Supply Center, Philadelphia. The AutoData Scan application was installed to capture issues made to both male and female recruits at LAFB AFCIIF.

To accurately capture the issue data and subsequently decrement stock levels, the AutoData Scan application was programmed to track issues made to recruits by capturing the name, social security number (encrypted to ensure individual privacy), flight number, stock number, quantity issued and date issued as an individual issue file. This data is used to decrement each line item

of supply issued to a particular recruit within a specific flight on a specific day and thus provide an audit trail of transactions.

5.5.2 Smart Cards and Trainee Personal Information Rosters

Upon arrival at LAFB, each recruit is issued a Smart Card (common access card). The card is used as a cash card to pay for haircuts and other expenses. The card contains recruit name, SSN, and component; i.e., Active, Reserve, or Air National Guard. It does not contain the Flight Number and therefore was not used to generate scan forms for the Phase 1 issue.

The Trainee Roster is being used as the source document for personal information to create the scan forms. Trainees arrive, by Flight, for First Issue and Second Issue based on a weekly schedule provided to the AFCIIF by the 319th Training Squadron. Prior to arrival of the recruits at the AFCIIF for the First Issue, the AFCIIF is sent a roster by Flight Number in a .dat file attached to an email. The file is printed and distributed as necessary. The figure below is an extract from that file.

1	2	3	4	5
40	VIGIL MARIA STAR	XXXXX6709	W544	324
41	WILLIAMS SUKESHA YUMIKO	XXXXX1771	W544	324
42	WILSON SKYE JOY	XXXXX2189	W544	324
43	WOODARD NIESHA NICHOLE	XXXXX7020	W544	324
44	YBARRA ANGELICA MARIA	XXXXX4538	W544	324
G01	AYRES AUDRA L	XXXXX0349	W544	324
G02	ROSANDER KARI A	XXXXX2107	W544	324
G03	WHELIHAN LYNDA S	XXXXX0264	W544	324
R01	GEORGE AVERY M	XXXXX6945	W544	324
R02	GRANT ASHLEY LIANA	XXXXX8902	W544	324
R03	GRIFFIN MELISSA A	XXXXX2407	W544	324
R04	HNATOW ANASTASIA M	XXXXX2293	W544	324
R05	LUJAN ARMILYNN R	XXXXX9264	W544	324

Table 10: Example of Trainee Roster

Column	Description
1	Roster Number—an R is a Reservist; G is a Guard member
2	Name
3	SSN (entire number is available, Xs are used here for privacy purposes
4	Flight Number—W is a Flight of female recruits
5	Squadron Number

Table 11: Legend For Trainee Roster

5.5.3 Implementation

The Trainee Roster is copied to a floppy disk and uploaded from an ARN LAN workstation to the Trainee Master data table, which is then used to populate the Male and Female First Issue scan forms. The scan forms are completed as a mass exercise after the issue is completed. The timely posting of accurate roster data is essential for this process to be completed for uniform issues and to generate the financial billing records and audit trail information.

5.5.4 Forms Design

Forms were designed in close coordination with AFCIIF personnel. The table below lists the six forms required.

Issue	Description
Male First	First Issue Male Active, Reserve, Guard
Female First	First Issue Female Active, Reserve, Guard
Male Second A	Second Issue Male Active
Male Second RG	Second Issue Male Reserve and Guard
Female Second A	Second Issue Female Active
Female Second RG	Second Issue Female Reserve and Guard

Table 12: List of Scan Forms Required

5.5.5 Security

Control of Sensitive SSN data. Only the last four digits of SSN are written to the ARN Database to ensure privacy of the individual as previously noted.

5.5.6 Scan Form Data Flow

Figures 9 illustrates the creation of the recruit issue or scan forms, showing items to be issued. The recruit carries the form to each issue station. The forms are used to record the issue of the appropriate clothing items.

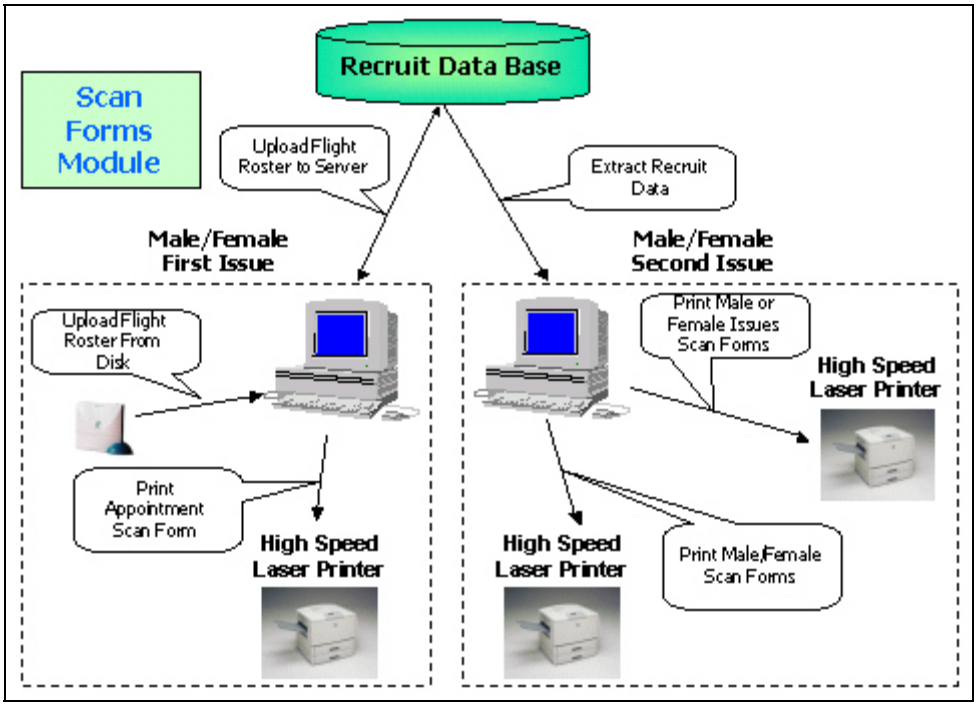


Figure 9: Creating and Processing Scan Forms

5.6 Electronic Document Management System

In order to provide an efficient manner in which to manage and retrieve (if necessary) the recruit issue forms, AdvanTech incorporated a commercial off the shelf software (COTS) document management product (CabinetNG). This application electronically stores the scanned image of each recruit's issue form. This provides an easy and efficient method of searching for and retrieving any specific data needed for verification or correction. The data can then be easily archived or deleted as applicable.

5.6.1 Implementation

Five licensed copies of the CabinetNG product were provided and installed. Two copies were loaded on workstations in Room 1133 and two copies were loaded on the workstations in Room 1130 with the form scanners. The final copy was loaded to the ARN LAN server in Room 1133.

This function eliminates the need for costly storage space currently required for the filing and storage of thousands of recruit issue forms. Forms are electronically stored and will be easily archived and retrieved upon demand.

An image of each form is captured automatically and filed to the CabinetNG server. Each user accesses the server files from their PC (see Figure 10: Electronic Filing Cabinet for Completed Scan Forms Storage).

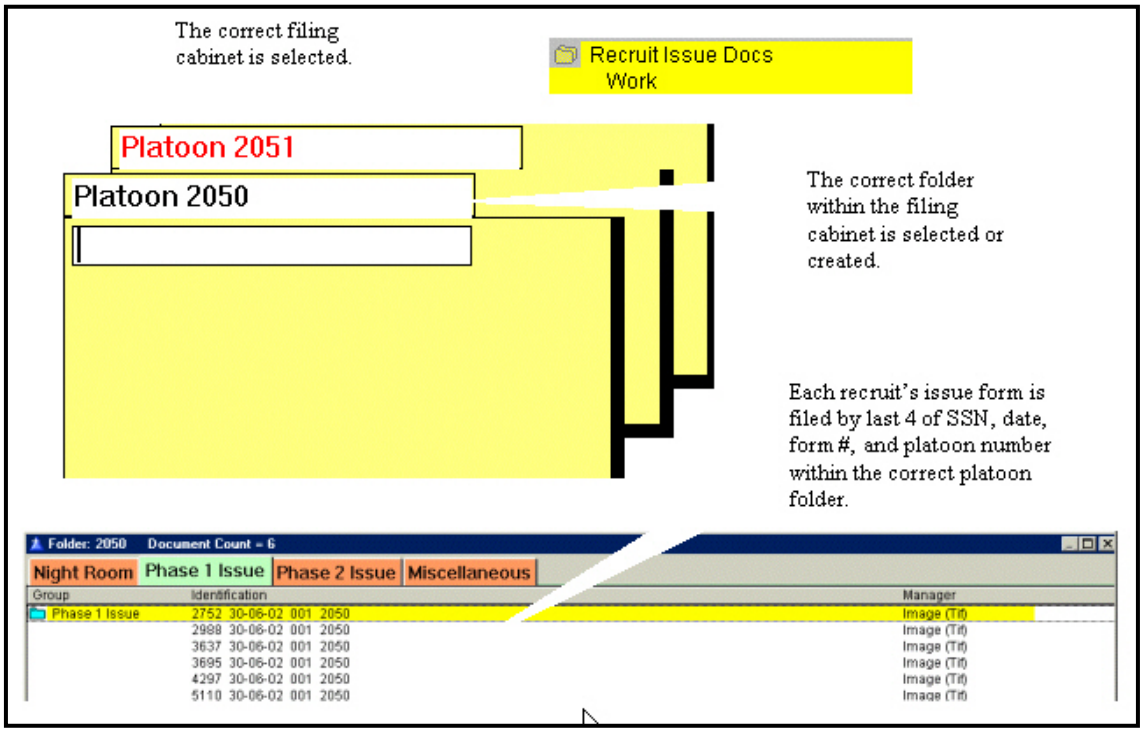


Figure 10: Electronic Filing Cabinet for Completed Scan Forms Storage

(Note: Sample illustrated is based on USMC Implementation and was adapted for AFCIIF implementation, e.g., Trainee v. Recruit, and Flight v. Platoon.)

Using the CabinetNG tools, AdvanTech programmed an interface whereby a routine will open CabinetNG, Select the Trainee Issues filing cabinet, Open or Create the Flight filing folder, select the appropriate folder tab and save the scanned issue form in a tag image file (*.tif) format to the correct tab.

Six forms were developed and are used at the Lackland AFCIIF. These forms, when scanned, are filed in specific Filing Groups within each flight folder. The form Filing Group and the form specification are designated in the Form Master table within Access. The interface relates the

form number scanned to the Filing Group designation, and sends the form image to the correct folder and filing group.

The AutoData application routine saves a scanned form as a tif as previously noted; renames the tif to comply with the naming convention specified; automatically opens/creates the correct flight folder; selects the appropriate filing group; and saves the document in the correct filing group. Users can manually create the document-filing group if a form is added.

Storage capacity is a potential risk if users are not able to electronically archive to a CD at least quarterly. End users do not have administrative privileges to delete records.

5.6.2 Security

Access to CabinetNG Cabinet. User login and password is unique to CabinetNG and must be established by the CabinetNG administrator. Only authorized persons are given access to the Trainee Issues cabinet.

Access to Trainee Folders. Users that are granted access to the Trainee Issues cabinet are given one of the following hierarchical privileges to all Trainee folders – None, View, Work, Create, Delete, Lock.

Access to Issue Form images with Trainee's Social Security Number. Users that are granted access to the Trainee folder are given one of the following hierarchical privileges to all Trainee Issue Form image documents – None, View, Work, Create, Delete, Lock.

5.6.3 Data Flow

The following illustration provides a graphic depiction of the way the issues are processed through the various system modules comprising the ARN IRM.

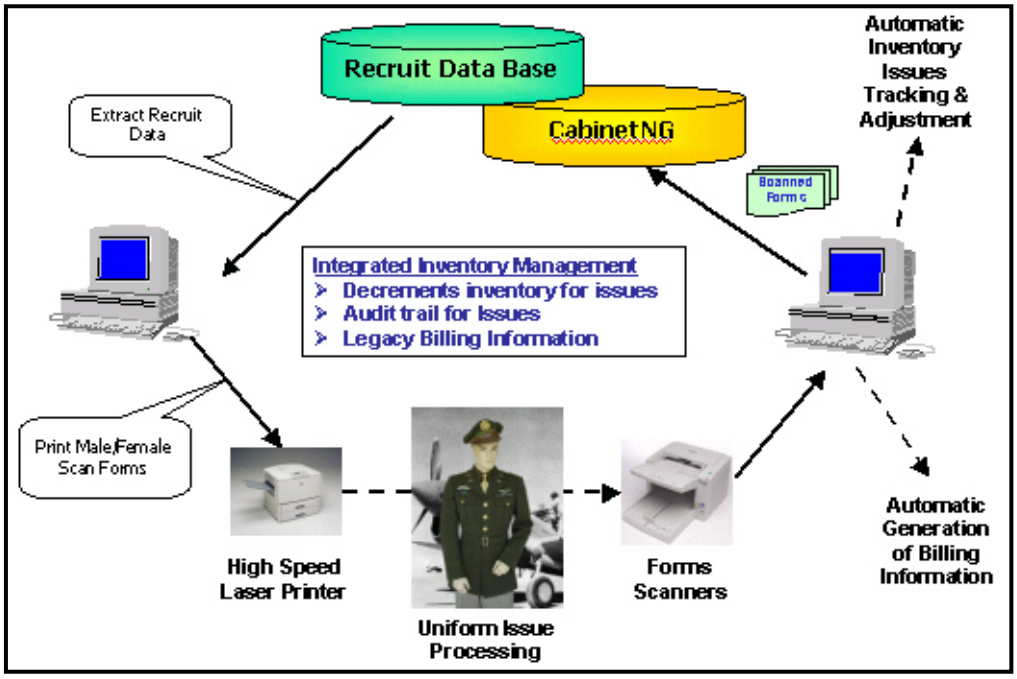


Figure 11: Data Flow of Scan Forms and Electronic Data Storage

5.7 Recommended Stock Levels and Replenishment Support

The arrangement, at that the time of implementation, between DSCP and Travis Association for the Blind (DSCP's Virtual Prime Vendor), of maintaining 21 days of supply at the AFCIIF and an additional 40 days of supply in the warehouses of Travis, was in line with stock levels set at Army and Marine Corps RTCs under the ARN program. It was recommended that these stock levels remain in place through a minimum of 180 days under DSCP ownership. At that time, April 2004, stock levels would be reviewed and adjusted as necessary.

Replenishment support will continue to come primarily from the Travis Association for the Blind. A secondary replenishment activity will be selected with assistance of C&T DSCP.

5.8 Lackland AFCIIF Roles and Responsibilities

The key roles and responsibilities of the LAFB AFCIIF personnel are to maintain operation of the ARN Integrated Retail Module and the related local (wholesale local) inventory management capabilities as defined in the DSCP and LAFB Memorandum of Agreement (MOA).

One of the key steps in the integrated processing of the flights at AFCIIF is the timely and accurate provision of the Training Flight Roster Information from the 319th Training Squadron via the *.dat file. This information is used to prepare the AutoData Scan Forms that are subsequently used to record the recruit issues and to prepare the financial billing information.

Accomplishment of system operation and inventory management responsibilities, including policies and procedures, were thoroughly covered during system implementation, training and post go-live support activities.

5.9 Training and Support

Prior to go-live, training was conducted for key personnel on the various components of the system. Key personnel were identified by name in coordination with the AFCIIF supervisor. Training was primarily hands-on, one on one instruction.

5.9.1 Local Area Network

Training was conducted for two individuals who were appointed as the on-site system administrators. Their responsibilities consist of basic system tasks, such as adding new users, archiving files to CD-ROM or tape drive, conduct user maintenance, and act as the point of contact for all network issues. In addition, they were trained in the use of the Radio Frequency system.

5.9.2 VIM/Wholesale Local Web-Based Materials Management System

Training was conducted for the Officer In Charge, the Deputy Officer In Charge, and the local stock managers/expediters.

Training covered the VIM Wholesale Local Menu items, to include sub-menu selections listed in the chart below.

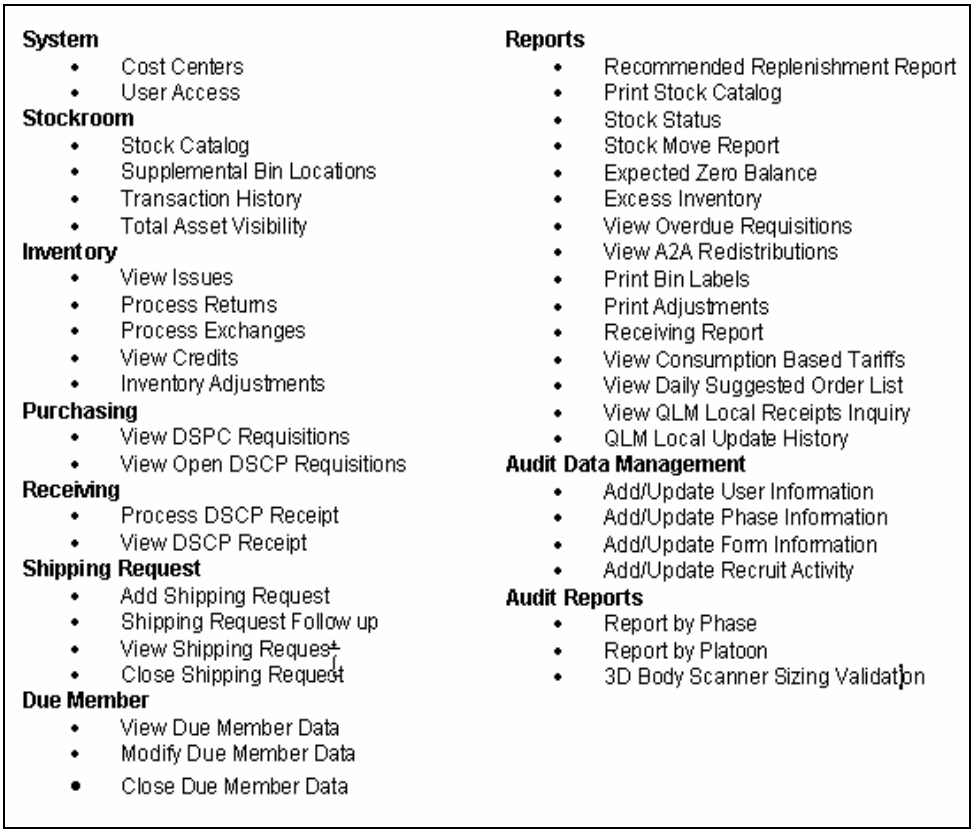


Figure 12: VIM Wholesale Local Menu Items to be Covered in User Training

5.9.3 AutoData Scan Forms and the Electronic Filing Management System

Training was conducted for the Officer-In-Charge, the Deputy Officer-In-Charge, and those individuals whose responsibilities were to create and process the scan forms. Training covered the use of the Scan Form Control Panel, as depicted below, to print and process scan forms.

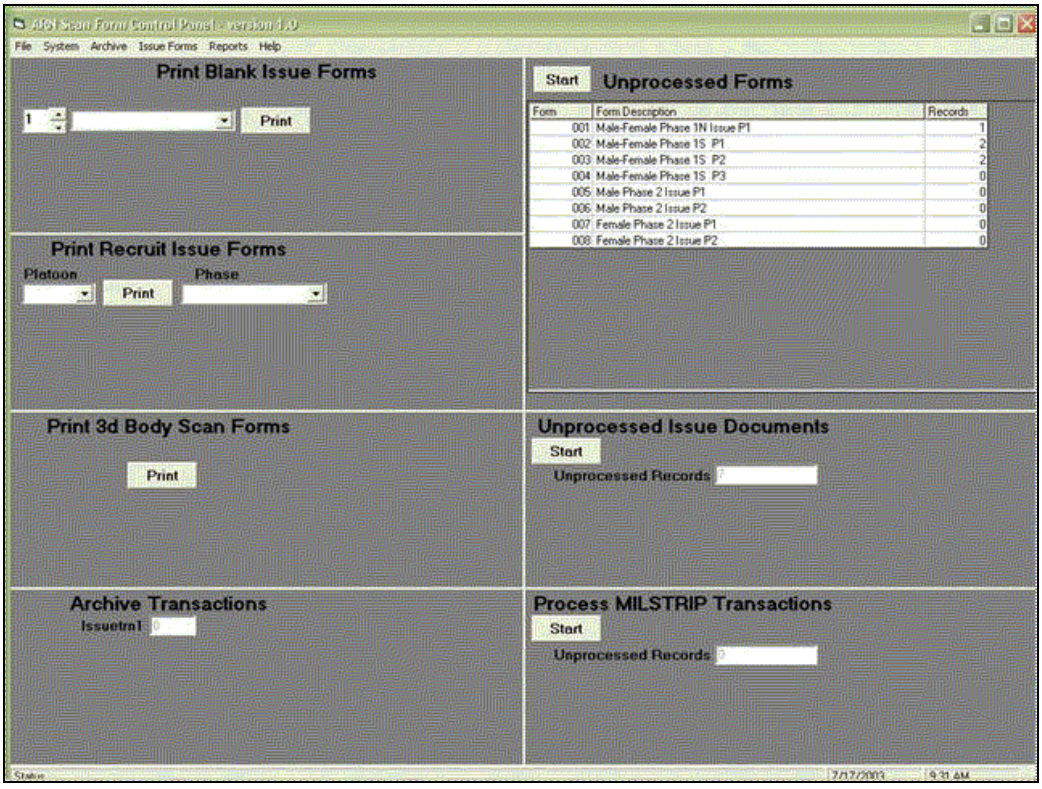


Figure 13: Control Panel for Producing and Processing Scan Forms

5.9.4 Radio Frequency Equipment

Training was conducted for the Officer-In-Charge, the Deputy Officer-In-Charge, and receiving personnel.

Training consisted of basic HHT care and maintenance; receiving functions, stock transfer functions, and inventory functions.

5.9.5 Follow-On Training and Help Desk Support

At approximately six weeks after go-live a follow-on one-week training visit was conducted. Additional refresher training was conducted during the four months following go-live.

After go-live, AFCIIF personnel utilize the ARN -IRM Help Desk, by telephone or email, to request assistance.

On site support is provided for the first DSCP directed semi-annual inventory after go-live.

6.0 SUMMARY OF BENEFITS ACHIEVED

This project has provided several benefits and a substantial return-on-investment for DLA and DSCP. It continues to enhance management of the AFCIIF wholesale local ("retail local") inventory. Benefits have been provided through the development and implementation of comprehensive decision support tools based on the proven concepts and approaches of the ARN VIM and ARN IRM systems.

This section provides summary information on the results that were achieved at LAFB AFCIIF. It is important to note that the support has not ended with the completion of this project and that refinements continue to be made to fine-tune operational support and efficiency of the supply chain activities.

6.1 Inventory Statistics

- Stock Status. ARN VIM and ARN IRM were operational on 1 October 2003. Figure 14, below, shows the ARN IRM system capability to hold down the Average Days of On Hand (ADOH) as long as sales were commensurate with Average Dollar Value On Hand (ADOH). A command decision to reduce the number of recruits processed has led to a reduction in sales and a disparity between the ADOH and sales. AFCIIF management is proceeding to reduce ADOH to an acceptable level.

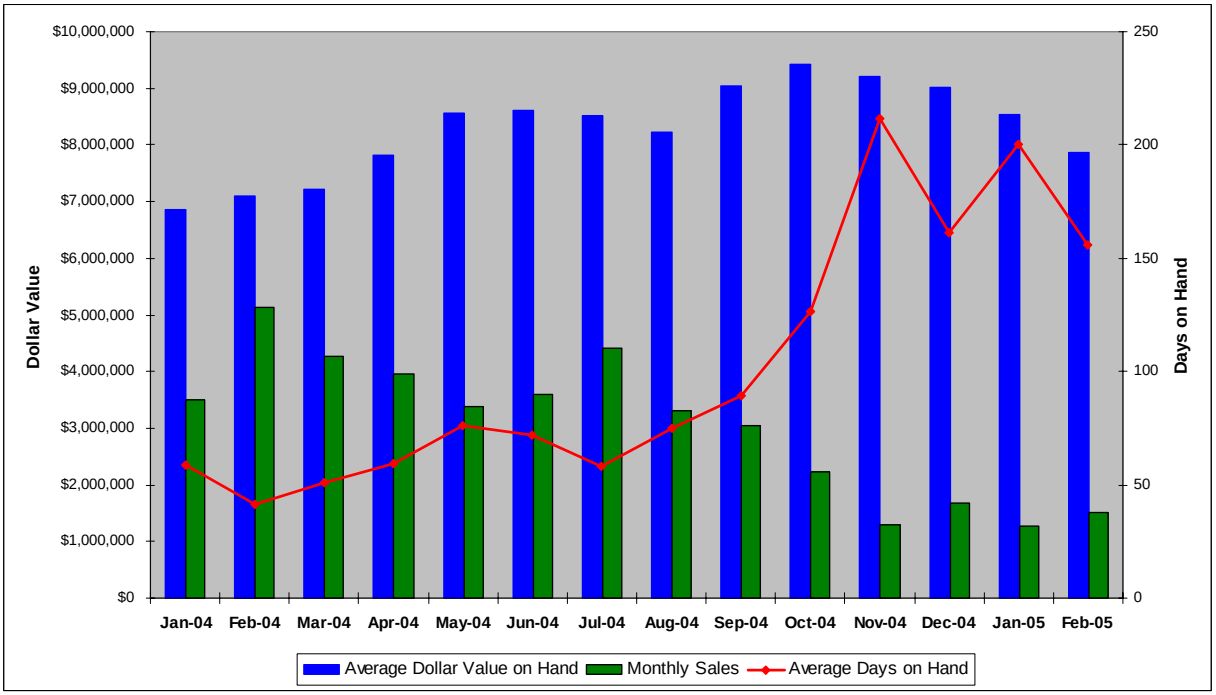


Figure 14 – AFCIIF Stock Status

- Fill Rates. Timely replenishment actions by the AFCIIF, using the ARN VIM IRM supply chain management tools, has resulted in first time fill rate of 98 percent, as shown in Figure 15, First Time Fill Rate Percent. Figure 16 reflects an overall fill rate percent of 99 percent.

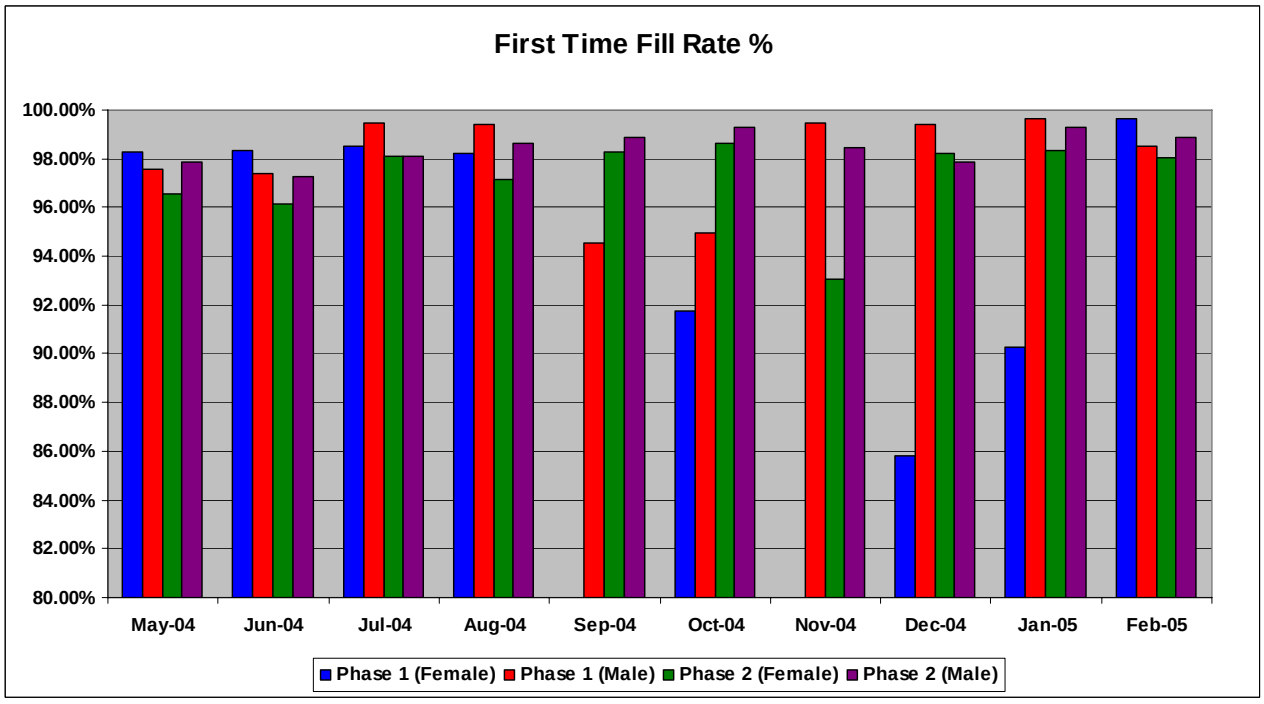


Figure 15 – First Time Fill Rate Percent

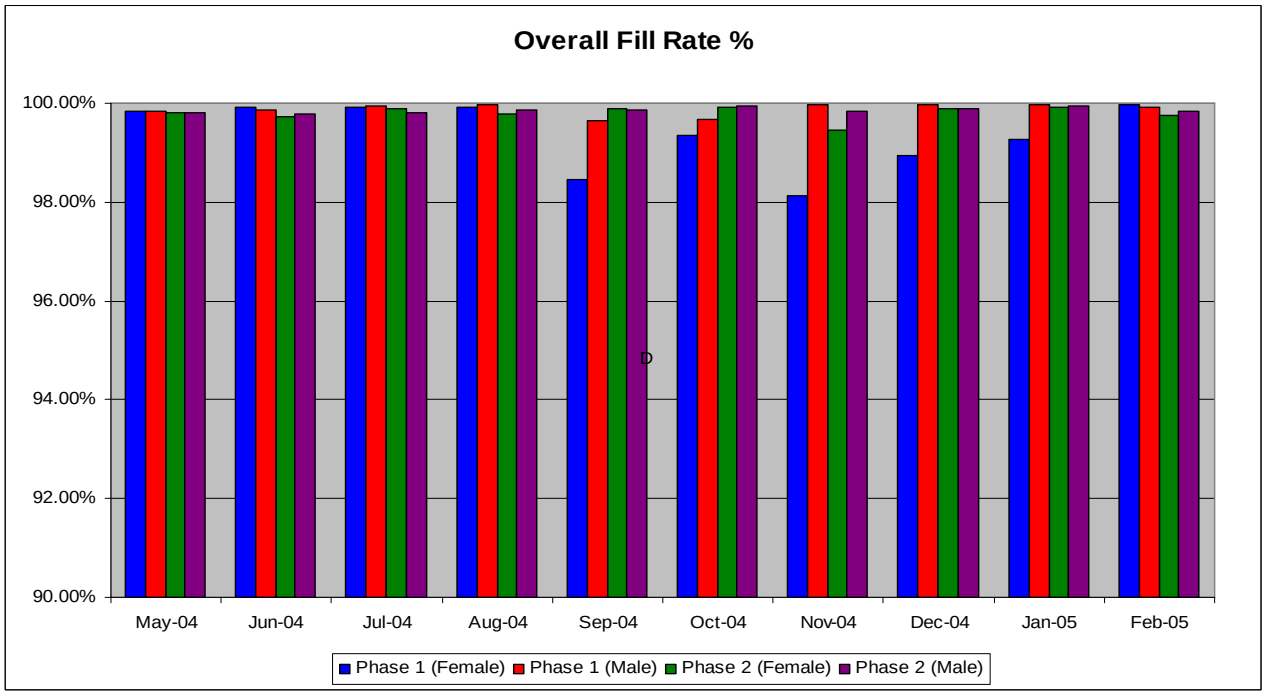


Figure 16 – Overall Fill Rate Percent

6.2 Management Metrics

AFCIIF management's initial reaction to the ARN VIM and ARN IRM systems implementation and operation was not positive. AdvanTech and its technical support personnel continued to work with the AFCIIF staff on a regular basis after Go-Live, providing on-going training and system support. The persistence on the part of AdvanTech, and the AFCIIF, resulted in the most positive outcome of any of the ARN IRM implementations throughout the military RTCs.

The AFCIIF gives a great deal of credit for system success to the:

- ARN Help Desk staffed by AdvanTech – The AFCIIF terms the Help Desk "awesome," because Help Desk personnel quickly respond to problems and questions;
- Improved billing process, which eliminates manual accounting for sales;
- User friendly report screens, which assist the supply chain management process; and,
- System features that keeps adequate stock on hand to meet the needs of the customers.

The following management metrics, as reported by AFCIIF management, are testimony to the system's success and impact, and to the ability of the AFCIIF to maximize the use of the supply chain management tools available to them in ARN VIM and ARN IRM:

- The AFCIIF is now using the system to obtain complete asset visibility, and to concurrently initiate timely replenishment actions,
- Timely replenishments has resulted in a better fill rate, which reduced the number of recruits that did not receive a full clothing authorization from a high of 600 per month before ARN IRM, to less than 10 per month with ARN IRM,
- Timely replenishments and better fill rate also resulted in the correct sizes being in stock, which reduced the number of uniform alterations by 75 percent,
- Timely replenishments, resulting from daily-suggested order lists, reduced emergency orders by 95 percent, and
- The automated physical inventory features greatly improved accountability, and the inventory accuracy rate improved from 95 percent before ARN IRM, to 99 percent with ARN IRM.

6.3 Summary of Initial Project Objectives and Results Achieved

There were several objectives defined at the start of the project. The initial project objectives and results achieved from implementation of ARN VIM and ARN IRM include the following:

- **Asset Visibility –**

  The ability for DSCP to efficiently see all data is required to meet ARN's objective to "see" on-hand inventory data regardless of the location at the RTC. This is the core functionality required as an essential aid to decision-making and has been successfully accomplished.

- **Legacy Interface –**

  The ability of the ARN solutions/software to work efficiently with existing external systems to meet current military department requirements was a key requirement, and has been successfully accomplished.

- **Current Information –**

The ability of the proposed solution to provide access to current information on an as needed (i.e., timely) basis has been successfully accomplished.

- **Improve Operational Efficiency –**

  This criterion provides an estimate of the potential impact of the proposed solution to enhance the efficiency of the LAFB operations. This includes impacts on personnel support requirements for data collection, processing and materials handling activities.

  This has been successfully accomplished, and additional improvements including personnel training in the use of automated data capture (bar code labels and hand held bar code scanners) capabilities was accomplished in the follow-on support and maintenance activities.

- **Improve Effectiveness –**

  The potential impact of the proposed solution to have a favorable impact by supporting the management decision-making process – both at LAFB and DSCP – has been successfully accomplished. The systems in place enable minimum <u>total</u> inventory with lowest stock outs.

This project provided several benefits and a substantial return-on-investment for DLA and DSCP. It enhanced management of the "wholesale-local" inventory. Benefits are being provided on an ongoing basis through the use of comprehensive decision support tools now available in VIM-IRM.

By using this technology, DSCP now receives timely, accurate recruit specific issue data. This gives the DSCP Item Mangers the ability to accurately plan production requirements with their Manufacturers. It provides the data necessary to allow ARN VIM and ARN IRM to accurately predict future wholesale-local inventory requirements to ensure the proper amount of inventory is located at LAFB when it is needed. This data allows the DSCP Item Managers to better predict the future requirements for all new items that could be added to the Recruit bag.

VIM is being used as a common user interface, i.e., application front-end, to access the VIM-Wholesale Local capabilities, and the MILSTRIP data generated based on the activities at LAFB. VIM provides access to ARN VIM and AAVS DataMart for Item Managers to extract and review data on all current asset inventories and related requisitions in SAMMS. ARN IRM extracts essential data from the AAVS DataMart and provides DSCP and LAFB Item Managers with the ability to manage inventories in support of end-user requirements based on recruit load factors, their unique "shipping" plans, and other policy directives or locally established performance parameters.

ARN VIM and ARN IRM provide decision support capabilities to evaluate stock levels and replenishment requirements at all related wholesale-local asset inventory locations, as desired and directed. These capabilities, in turn, provide DSCP IMs with the ability to manage the redistribution of assets from DSCP Depots and "Bill & Hold" locations to the appropriate location to support LAFB.

By using the capabilities provided by VIM-IRM, DSCP has been able to effect significant reductions of both wholesale-local (LAFB) and wholesale inventories. Using these systems capabilities linked through a common-user interface – the VIM browser front-end – the DSCP IMs are able to review asset levels and manage the wholesale-local inventories at LAFB.

The initial estimates of the benefits of ARN VIM and ARN IRM viewing and managing local and remote assets were based on the business cases previously prepared by both Cal Poly and Clemson Demonstration Projects with objective support provided by the Logistics Management Institute. The projections for the ARMY CIIPs and the two USMC Recruit Depots indicated approximately $30,000,000 of wholesale inventory draw downs would be achieved from the enhanced management of the RTC Retail inventories (see Cal Poly Business Case and accompanying Logistics Management Institute projections). In addition, an estimated $2-4,000,000 inventory reduction would occur at each additional Recruit Training Center supported with ARN IRM and ARN VIM-Wholesale Local capabilities.

Ultimately, the results achieved proved the concepts for centralizing the ownership of the inventories at the RTC locations with replenishment handled as part of an integrated management of wholesale inventories. Thus, this project provided a sound framework for the future expansion of these concepts for future enhanced support of the Recruit Training Centers by the Defense Supply Center Philadelphia.

APPENDICES

Appendix A – Project Personnel

Appendix B – Definition of Terms/Acronyms

Appendix C – Site Survey Process & Checklist

Appendix D – Trainee Flows Through the Issue Points

Appendix E – Hardware/Software Description

Appendix A – Project Personnel

The following personnel were involved in various phases or tasks for this project. Each of these individuals played key roles and worked closely together in achieving the desired results from the ARN VIM IRM system implemented in support of LAFB AFCIIF operational needs.

Individual	Position/Title
Ronnie Barney	LAFB AFCIIF Supervisor
Robert E. Bona	AdvanTech Systems Design Engineer
Dennis A. Brekhus	AdvanTech Assistant Project Manager
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Appendix B – Definition of Terms/Acronyms

The following acronyms are used in this report and are provided to provide clarity of understanding for the reader.

- **ACIIPS –** The Department of the Army's Automated Clothing Initial Issue Point System. This was originally developed on a mini-computer and later moved from IBM System 34-36-38 hardware to an IBM AS400.
- **AFCIIF** – The Clothing Initial Issue Point referring to the locations where recruits are inducted into a branch of the military and receive their initial issue of clothing.
- **ARN** – Apparel Research Network made up of selected industry and academic partners working together to develop innovative solutions for the Apparel industries support of military departments.
- **ASCOT** – Automated System for Cataloging and Ordering Textiles
- **ASTRA** - ARN Supply-chain Transaction Repository Audit.
- **ARN AAVS** – the ARN Asset Visibility System being developed to provide asset visibility across the supply chain (i.e., all locations) to DSCP Item Managers and others.
- **ASAP** – The Automated Supply Apparel Processing (ASAP) Internet Web based capability for use by manufacturers in reporting status of work in process and quantities of finished goods in their respective inventories.
- **AutoData Scannable Office** – Software suite used to develop and process the scan forms used to capture recruit issues by NSN and quantity.
- **BDU** – Battle Dress Uniforms, commonly referred to as fatigues.
- **C&T** – Clothing and Textiles Division of the Defense Supply Center Philadelphia.
- **CIF –** Central Issue Facility. This facility provides for consolidated storage and issue of items that are issued for exercises and then returned for storage until they are again needed, e.g., tents, flak jackets, canteens, sleeping bags, etc.

- **CRF –** Clothing Reclamation Facility. Area where items that are either new or used are returned for processing and classified for reissue.

- **DFAS** – Defense Finance Accounting System - This system interfaces with DSCP for financial activities such as receiving verification. This platform tracks authorizations for vendor payments.

- **DoD** – Department of Defense.

- **DODAAC** – Department of Defense Activity Address Code –Used to identify source or destination of electronic financial information as a "cost center."

- **DOS** – Day Of Supply.

- **DSCP – Defense Supply Center Philadelphia -** DSCP controls the procurement and distribution of Medical, Subsistence (i.e., food), and Clothing and Textiles commodities to Defense Logistics Agency (DLA) depots and stock record accounts, worldwide.

- **Due Member** – A chit/form used to indicate that the Clothing Section owes a recruit a specific uniform item. Issued in lieu of a uniform item when that item is at zero inventory balance. The due member chit/form is later redeemed for the appropriate uniform item.

- **DVD** – Direct Vendor Delivery system where a vendor provides supplies ordered directly to the customer rather than first shipping the items to a depot.

- **EDI** – Electronic Data Interchange standards are used to facilitate computer-to-computer information transfers to achieve timely, accurate transfer of ordering data and related transactions.

- **EOQ** – Economic Order Quantity

- **Shipping Plan –** This document details the number of recruits the AFCIIF plans to train per year and the planned arrival dates at the Clothing Initial Issue Point.

- **MILSTRIP** – Military Standard Replenishment System

- **NSN** – National Stock Number

- **OL** – Operating Level
- **OST** – Order Ship Time
- **QDR** – Quality Deficiency Report. These are used to track items that are outside acceptable standards for issue to recruits. These reports provide for communication with DSCP Item Managers regarding problems of quality that are encountered.
- **QLM** – Quality Logistics Management™ – Material Management inventory system supporting acquisition, issues and distribution and predictive forecasting.
- **QLM/Central** – The Virtual Item Manager (VIM) system is comprised of several components or modules. The ARN VIM IRM software module provides the decision support system capabilities for managing wholesale stocks and supply redistributions to end-use customers based on analysis of forecasted and actual usage and inventory availability.
- **QLM/Local** – The QLM software implemented as a "wholesale local" inventory management system supporting acquisition, distribution and predictive forecasting at Ft. Leonard Wood as a prototype for future sites. The system provides a "local" capability to manage wholesale inventory assets located at the CIIP including receipt and inventory adjustment processing.
- **QLM/Retail** – The QLM software with enhancements implemented as a retail inventory management system supporting acquisition, issues and distribution and predictive forecasting at Marine Corp Recruit Depot-San Diego with interfaces to ASCOT and the Marine Uniform Materials Management System (MUMMS).
- **RIC** – Routing Identifier Code – Refers to a code used in SAMMS for identification of location where materials are to be shipped.
- **RO** – Requisition Objective
- **ROF** – Reorder Frequency
- **ROQ** – Reorder Quantity
- **ROP** – Reorder Point

- **RTC** – Recruit Training Center (includes Air Force AFCIIF) – These are the facilities operated by the different departments of the military where new recruits are inducted for basic training.

- **SAMMS** – Standard Accounting and Material Management System - This system is used by the Defense Logistics Agency, Defense Procurement Support Center.

- **SASS** – Support Activities Supply System - This system is interfaced to MUMMS at the base operations level. This is a Marine Corps "mainframe" platform used to support Operational Marine Units (also called the "Fleet Marine Force". There is no SASS interface with DSSC for clothing management. SASS supports base level programs such as the desks, chairs and other property management commodities.

- **Scan Forms** – Pre-printed forms developed with the AutoData Scannable Office software to capture NSN and issue quantity data for all recruit issues. Scan forms are processed with the AutoData Scannable Office software to accumulate and transfer issue information to data tables for further reporting to DSCP.

- **SL** – Safety Level.

- **VIM –** The Virtual Item Manager (VIM) system incorporates operational data extracted from the SAMMS Clothing & Textile (C&T) server as the basis for the operational and decision support capabilities provided in a single source of information for Item Managers at the retail (Recruit Training Centers) and wholesale (DSCP) level.

- **ARN VIM IRM** – The Virtual Item Manager (VIM) system is comprised of several components or modules. The ARN VIM IRM software module provides the decision support system capabilities for managing wholesale stocks and supply redistributions to end-use customers based on analysis of forecasted and actual usage and inventory availability.

- **VPV** – Virtual Prime Vendor

- **Wholesale Local Inventory** – Inventory at LAFB but owned by DSCP, maintained in bulk storage and on the issue lines to support recruit issues.

Appendix C – Site Survey Process & Checklist

The following guidelines and checklist were developed for use in completing the site survey process as part of the implementation activities for ARN VIM IRM at LAFB AFCIIF.

AGENDA
SITE SURVEY PROCESS & CHECKLIST

1. Introductions and Objectives

2. Initial Briefing, Discussion & Information Gathering

3. Tour Facility & Gather Information

4. QLM/Inet Setup Information Requirements

5. Exit Briefing/Discussion

AFCIIF SITE SURVEY DISCUSSION POINTS AND CHECKLIST

1. General Information:

a. **Accession Data** – Provide information on the projected number of recruits to be processed by the AFCIIF during the current fiscal year and previous fiscal year. Are there any significant fluctuations in monthly volumes of recruits processed? How big is the fluctuation? Are there any significant changes expected in the near future, e.g., additional recruit battalion to be added, etc.?

b. **Inventory dollars** – Discuss the current inventory operating levels and the expected level after go-live conversion (cap/decap).

c. **Number & Types of Employees to be Trained** – Review the current operational staffing levels and discuss briefly the numbers and types of employees to be trained, e.g., System Administrator, Receipt Processing, Data Entry, etc. List by name and position title/function.

d. **DSCP Prime Vendor & DVD Contractor Support** – Discuss the support of the AFCIIF by the DSCP Prime Vendor (if applicable), and Direct Vendor Delivery support. In particular, is there a dedicated truck and what is the usual and customary delivery time? Any support problems or

concerns that should be considered or addressed?

e. **Special Measurements** – Discuss the current processing of Special Measurements and note that these are not supported via QLM since QLM handles only items with standard NSNs. Discuss the use of ASCOT for on-line processing of Special Measurement Orders.

f. **Returns to Wholesale Inventory** – AFCIIFs are not currently allowed to return stock to the QLM/Local AFCIIF inventory.

g. **Primary RTC Point of Contact and System Administrator** – Discuss the functions of the System Administrator briefly and identify the local primary and alternate System Administrator.

h. **RTC Implementation Work Group** – Identify the individuals that will be key to the implementation process. (Consider the DOIM personnel for telecommunications issues, facilities personnel if appropriate, etc.)

i. **Organization:**

(1) Clothing department's organization chart by function.
(2) Number of personnel with military and civilian grade.

j. AF-CIIF Flow:
- Recruit physical flow through each issue process, from arrival to departure. Provide explanation of what occurs at each step in the process.
- Physical flow of uniform items from arrival at Lackland until issued to recruits.
- Recruit Uniform Issue Events
  - Type of issues (training uniform, dress uniform, etc)
  - Training day/week event is scheduled
  - Amount of time allotted for appointment
  - High, low, and average number of recruits per appointment

k. Obtain permission to take photographs of the Issue Process

l. Develop Technology Assessments and Implementation Report.

2. Logistic Data

a. NSNs Stocked – Discuss system parameters for average daily usage by NSN

b. Budget Performance – Briefly review average monthly dollar flow

b. Stock Master with weekly updates (pricing) at T-4 weeks (issues, stock status)

c. Primary Source of Supply – Which depots & manufacturers are supplying the AFCIIF?

e. Order Ship Time – Discuss any issues or concerns with Order Ship Time.

f. Locator System – Build Bin and bulk locations as early as possible.

g. Temporary Holding Areas for Stock Segregation – Discuss need for and location of separate hold areas for DSCP inventory versus AFCIIF inventory during the 2 week switch over.

h. Typical 12 month Recruit Shipping Plan, by week, by male/female.

i. Any unusual surges in recruit load; e.g. Christmas Break.

j. Number of NSNs stocked/used.

k. Provide 12-month usage, by month, per NSN.

l. Current materials management system.
- Name of system
- Functions and capabilities
- Automated and manual processes
- Links to other systems (will need to articulate what requirement is to transmit data to these systems) including the financial system.

m. System for reporting recruit issues
- Name of system (Scantron?)
- Functions capabilities
- How employed
- Automated and manual processes
- Need good quality hard copy of each form, and architecture of associated data tables.
- How is data collated, where is data sent, and how is data transmitted.

n. Other systems in use in clothing department (Common Access Card, inventory system, Handheld scan, etc.)
- Name
- Function
- How employed
- Automated and manual processes
- Links to other systems.

3. Facility Description

a. Storage Space – Review AFCIIF operation space and storage of inventory.

b. Operational Concept and Procedures – Review current operations and inventory flow and processing.

c. AF-CIIF Location – Determine specific shipping location for hardware delivery.

d. Walk through to determine: equipment location, process flows, ROI factors, and Common Access Card use/requirements.

4. Site Preparation

a. Hardware – PC Server with product code scanner (T-5)

b. Power – Availability of power

c. Commercial telephone line for FTP, pcAnywhere, Internet – to avoid the local firewall

d. Commercial telephone contact

e. Point of Contact Information – Building number, room number and point of contact for phone drop

f. Internet to and from DataMart and SAMMS and QLM/Central "Lite

g. Local ISP name, address, and telephone number

5. RF Communication Steps

a. Points of Contact:
- Information Technology POC
- Base Communication POC

b. Conference with POC to start approval process for RF

c. Teleconference with POC to start approval process for use of RF devices

d. Floor Plans of warehouse to ascertain square footage, columns, and walls to determine obstructions to RF. If possible, provide a scale schematic of the recruit clothing facilities, to include warehouses and receiving areas. Provide a site map of Lackland that shows recruit clothing storage and issue locations for RF planning. If all recruit-clothing functions are contained within one facility the latter will not be required.

e. Coordinate cable or DSL at the site.

f. Gain approval for RF installation.

g. Schedule Symbol for a RF Survey.

h. Symbol Installation of RF Network

i. Implement RF Apps

6. Installation & Operation

a. User Manual and Train Users

b. Primary work will be with two screens
- Entry of DSCP Receipts (scan 1348-1 into system)
- Inventory Adjustments Screen

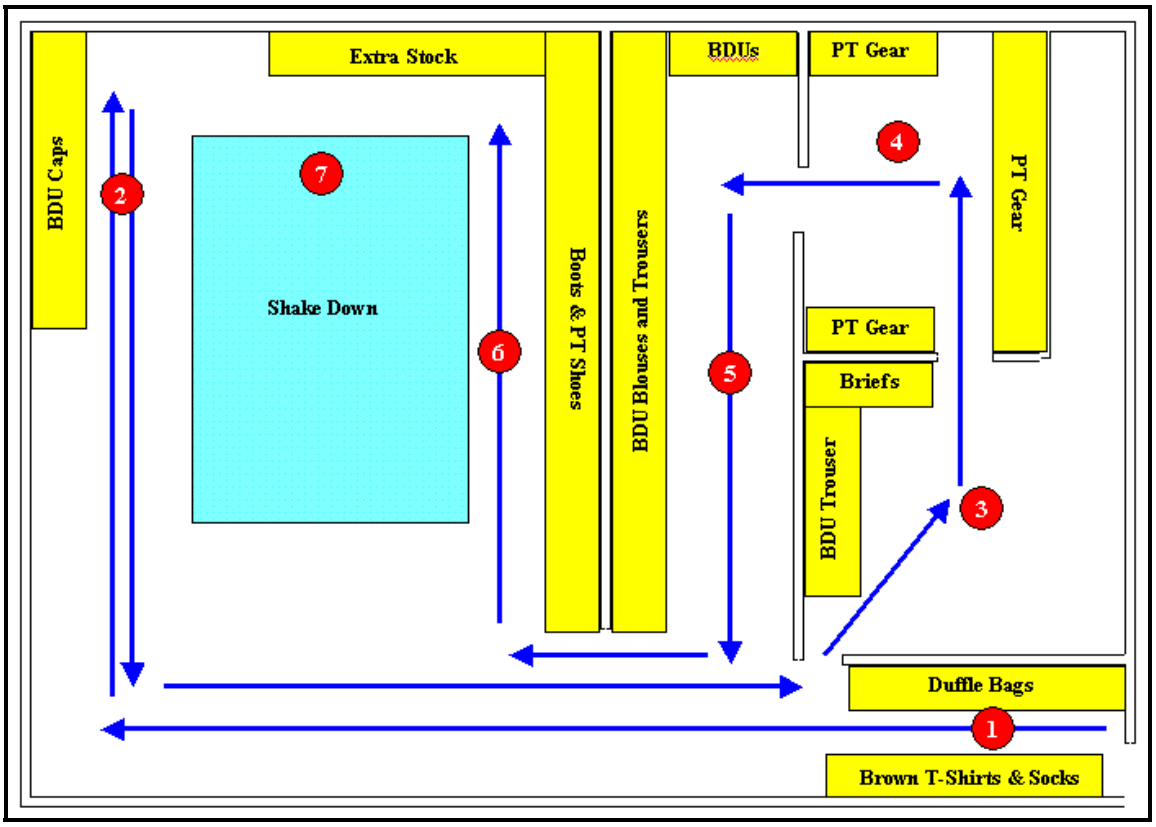
c. System Administrator
- Security and user access
- Reports
- ATI Web site = current orders and status

d. Purchase Equipment

e. Post Go Live Support

Appendix D - Trainee Flows Through the Issue Points

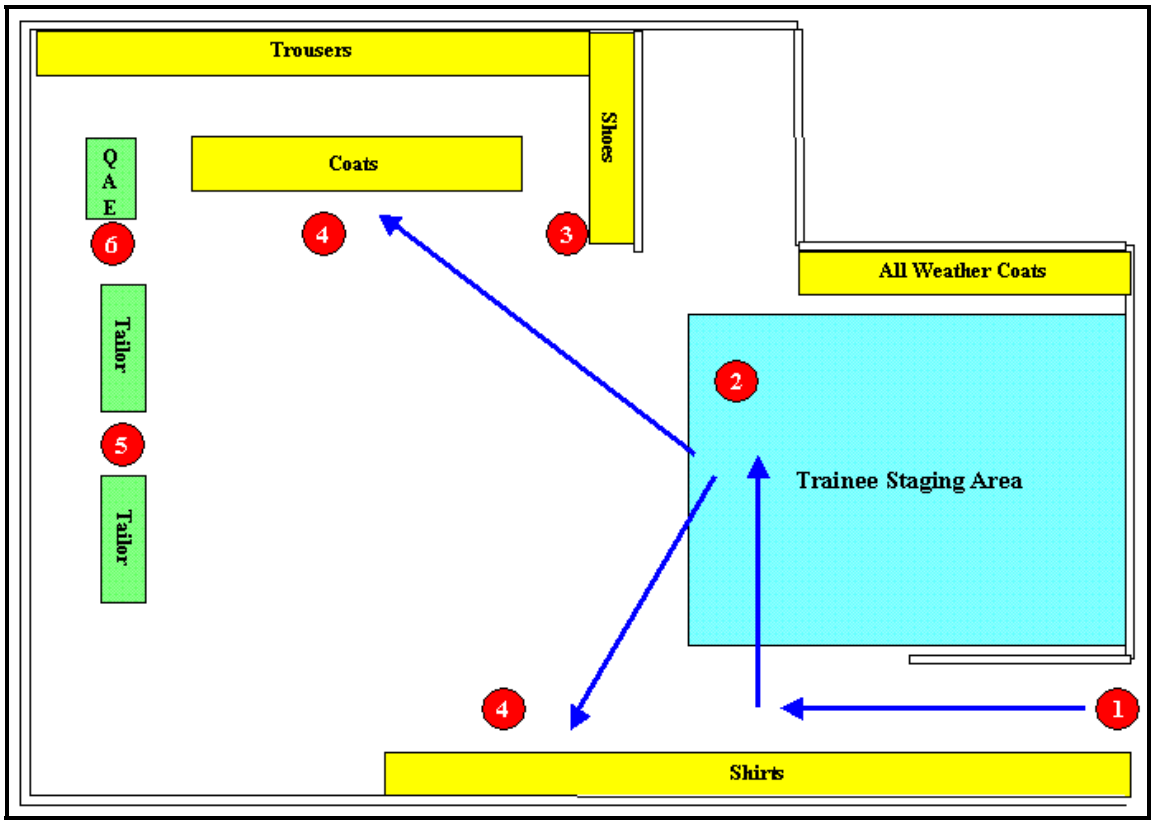
Male First Issue



1. Trainees enter and are issued duffle bag, brown t-shirts and socks.
2. Trainees are issued the BDU caps.
3. Trainees are issued a pair of BDU trouser and jockey briefs.
4. Trainees issued physical conditioning uniform.
5. Trainees issued BDU trousers and blouses.
6. Trainees issued running shoes and boots.
7. At Shake Down, recruits issued small miscellaneous items, such as belts/buckle, validate quantity and sizes, and complete the Scantron form as a mass exercise.

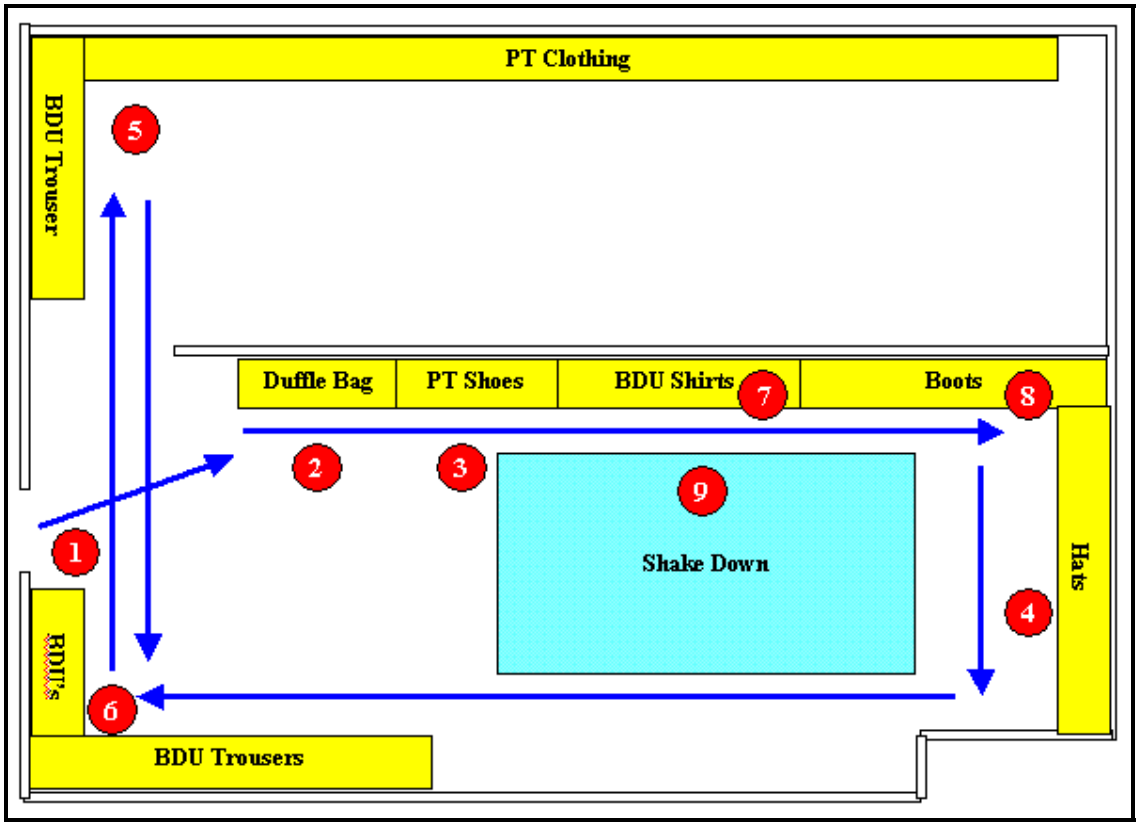
Note: Trainees are processed through the issue point by Flight.

Male Second Issue



1. Trainees enter issue point. (May process up to three Flight simultaneously)
2. Trainees proceed to staging area for briefing.
3. Trainees issued dress shoe.
4. Trainees are directed to various bins and shelves, and select uniform items by “try-on” method.
5. Trainees are directed to contract tailor.
6. QAE validates and approves tailor marks.

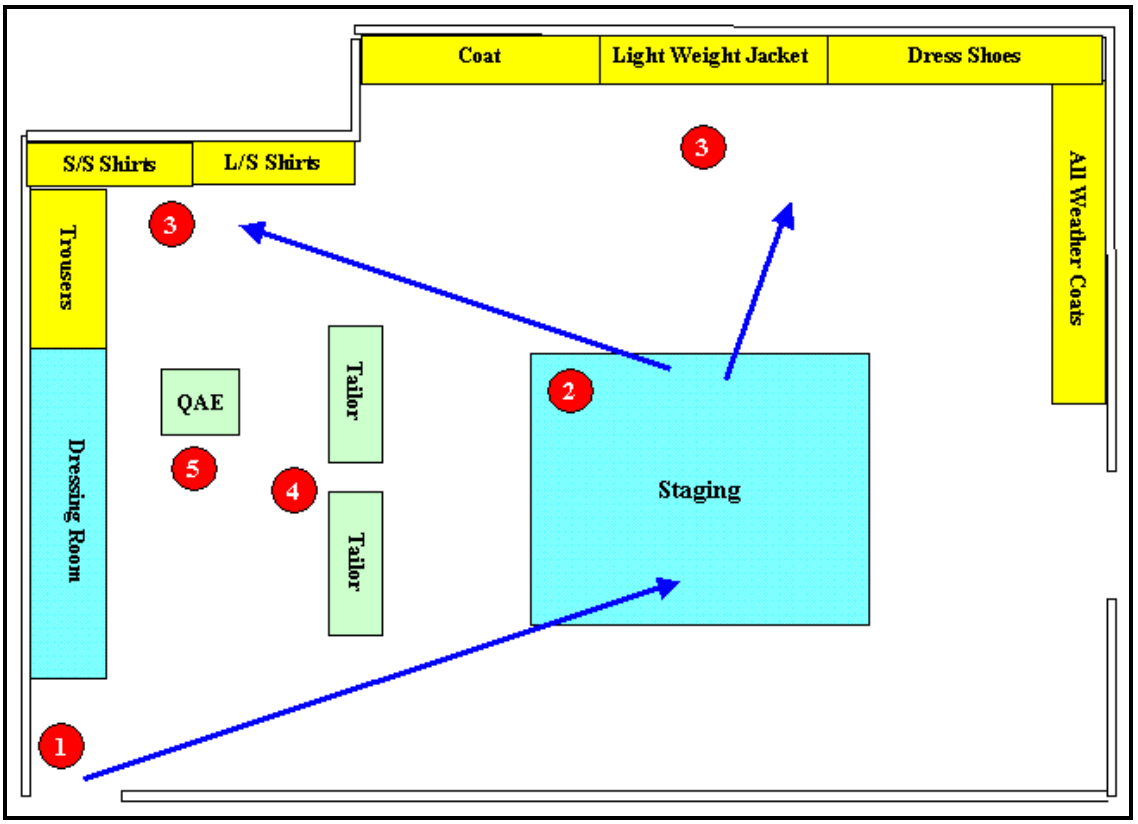
Female First Issue



1. Trainees enter issue point.
2. Trainees issued duffle bag.
3. Trainees issued running shoes.
4. Trainees issued BDU caps.
5. Trainees issued one BDU trouser and physical conditioning uniform.
6. Trainees issued BDU trousers.
7. Trainees issued BDU shirts.
8. Trainees issued boots.
9. At Shake Down, recruits issued small miscellaneous items, such as belts/buckle, validate quantity and sizes, and complete the Scantron form as a mass exercise.

Note: Trainees are processed through the issue point by Flight.

Female Second Issue



1. Trainees enter issue point.
2. Trainees form in staging area for briefing.
3. Trainees are directed to various bins and shelves to select uniform items by the “try-on” method.
4. Trainees are directed to contract tailor.
5. QAE validates and approves tailoring marks.

Appendix E – Hardware/Software Description

Hardware/Software Description	Vendor
Symbol Site Evaluation	Computer Pro
Warranty for RF Network Access Point Equipment	Computer Pro
SPT 1800, Li-Ion Spare Battery	Computer Pro
One Symbol Palm 1746 keyboard	Computer Pro
1 RF HHT (SPT1700 Symbol, serial) single slot cradle, serial cable db9, power supply and line cord	Computer Pro
SPT17/1800 Series 4 Slot Serial Cradle w/ serial db9f cable, power supply and line cord	Computer Pro
Bronze Service for SPT 1700/1800	Computer Pro
Pre Stage HHTs	Computer Pro
HHT Program Revisions	Millennium It
1 RF Network Access Point (Symbol 11MB DS, for duel antenna)	Computer Pro
11mb SP 24v Power supply	Computer Pro
US Line Cord for 11 mb SP 24v Power Supply	Computer Pro
Omni-Directional Pipe Antenna, +3db, 4' plenum cable	Computer Pro
T-Bar Clip for AP	Computer Pro
AP Mount Bracket for wall	Computer Pro
AP-PSBIAS-T, DC Power over Ethernet for Symbol 11 mb DS AP	Computer Pro
SPT1846 Palm 33 mhz 8 mb RAM, 1d scanning	Computer Pro
Pre stage NAP	Computer Pro
Symbol 11mb DS PCI Card, 100mw	Computer Pro
Antenna for Symbol 11mb DS PCI Card, 0dbi, 2 MMCX connectors	Computer Pro
Supporting Symbol Items, 3' CAT5e patch cable, 100' CAT5e patch cable, 1000' CAT5e non-plenum, Box, 2 Port Surface Mount Wall Jack, RF45 Modular Connector for Internal or External Box, Linksys 5 port switch	Computer Pro
Network Cabling Support - Est. Allowance	Local Vendor To Be Determined
UPS Uninterruptible Power Supply for each NAP	Computer Pro
Symbol Installation Support	Computer Pro
Extract Data from Common Access Card	Milinium IT
CabinetNG License with 5 seats	ePaperless.com
Annual CabinetNG Support	ePaperless.com
SmartCard Reader	Gemplus, Webstore
450 Bay Stack 12 port hub	Micro Buy
Cisco Router, model 1721 modular router	Micro Buy
Dual Ethernet Uplink Charge	Micro Buy
UPS Uninterruptible Power Supply	Micro Buy

Multimode to Copper Media Converters	Micro Buy
Microsoft Office	BigClearance.com
PC Anywhere	CompUSA
Scannable Office	AutoData
Scannable Office 1st year maintenance support	AutoData
Panasonic High Speed Scanners	Nerds.net
Corel Office (Paradox)	Nerds.Net
Norton AnitVirus	BestBuy
Shipping and Handling - Est.	FedEx Ground